FIRE ENGINEERING

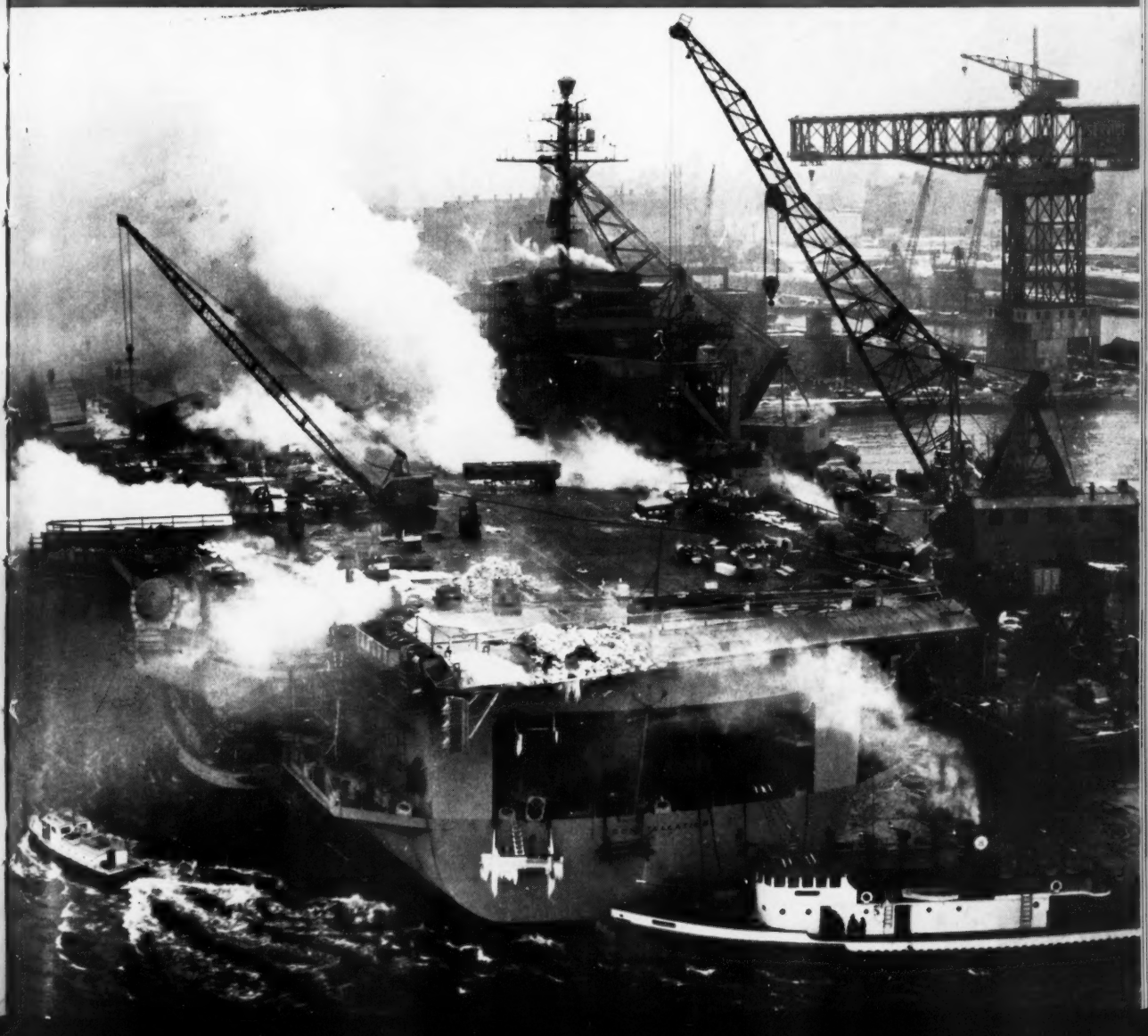
The Journal of the Fire Protection Profession Since 1877

A Reuben H. Donnelley Publication

FEBRUARY, 1961

OHIO STATE UNIVERSITY

The fireboat [illegible] *Fighter*, which brought 100 "probies" from Welfare Island training center to *Constellation* fire, is shown tied up to carrier's stern. Two 20-foot hooked ladders which the probies used to board the carrier may be seen atop pilot house. The cranes in the foreground were used to lift trapped workmen to safety.



Good Looking

Fire Commissioner Nelson Palmer (left) inspects new MAXIM Pumper with Deputy Chief John Madden and Capt. Kenneth Johnson.

Photo courtesy Asbury Park, N. J. Evening Press.

Here's proof!

New Maxim Pumper delivered to Fire Company, Shark River Hills, N. J., September 17, 1960. Same day it appeared in Firemen's Parade in Atlantic City, N. J.
Result—Fire Company awarded "Best Appearing Group"
On October 9, 1960, it again was entered in a parade, this time Asbury Park, N. J.
Result—Awarded "Best Looking Piece of Equipment"

Why not modernize your department?

MAXIM MOTOR COMPANY
MIDDLEBORO, MASSACHUSETTS

ALTERNATE BEAMS OF RED, (or other color) BACK TO BACK, PROJECT, AT EYE LEVEL, the familiar warning that clears traffic and stops pedestrians!

The Strat-O-Ray, with its four powerful sealed beams, rotating 360 degrees, is FEDERAL'S newest and finest contribution to safer emergency vehicle operation.

The tilted beams are on a separate circuit from the horizontal color lamps. The three position switch permits use of color only, to produce the effective and familiar warning of the famous Beacon Ray. The other "on" position of the switch operates all lamps for full Strat-O-Ray effect.

The Strat-O-Ray is the same size and shape as the Super Beacon Ray. It is equally durable and dependable in producing the striking contrast and impact value of its new and different signal.

Be sure you specify the FEDERAL Strat-O-Ray and the Class "Q" Coaster Siren on your new apparatus.

Ask for FEDERAL Catalog #300.

UP-DOWN! OVER-UNDER! RIGHT-LEFT! FRONT-REAR!

FEDERAL SIGN and SIGNAL Corporation

13602 S. Western Ave., Blue Island, Ill.

FIRE
ENGINEERING

VOL. 114 FEBRUARY, 1961 NO. 2

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We Are Exporters, too!

The Associated Business Publications—ABP—has urged its members to encourage American industries to increase exports of their goods to foreign countries. Despite the efforts of government agencies to stem the flow of gold from the United States, emergency measures will fail if industry does not take action to increase exports.

We join in this plea, not only because the gold balance must be firmed up, but because American products in the fire protection field can help foreign nations achieve the level of effectiveness we enjoy here. If we in America are short of our goal in fire control, it is not due to lack of soundly engineered apparatus and equipment.

But we must export ideas as well as commodities to foreign nations—and the ideas often must precede the flow of goods. To make other countries want American fire fighting equipment, we must tell them about it. That is why we value every foreign subscription and why we exchange publications with foreign technical journals.

We, too, are exporters—exporters of the written word to 56 countries of this world, that will increase the flow of ideas which may stem the flow of gold!

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UNISPUN FIRE HOSE

Continuous Uniform
Single Filament Filler
Co-Axially Spun Fire Hose

UNISPUN fire hose is engineered for the modern fire fighter. A major scientific breakthrough from ordinary methods of *weaving*, UNISPUN hose is formed instead by *spinning*. High performance fibers, after blending, are *spun* into constructions at high rotational speeds with extreme precision and uniformity. This new capability to produce *spun* tubular fire hose, another exclusive FABRIC achievement, is an effective assist to the modern fire fighter in search of the best equipment. For further details, write us today or contact your authorized FABRIC representative.

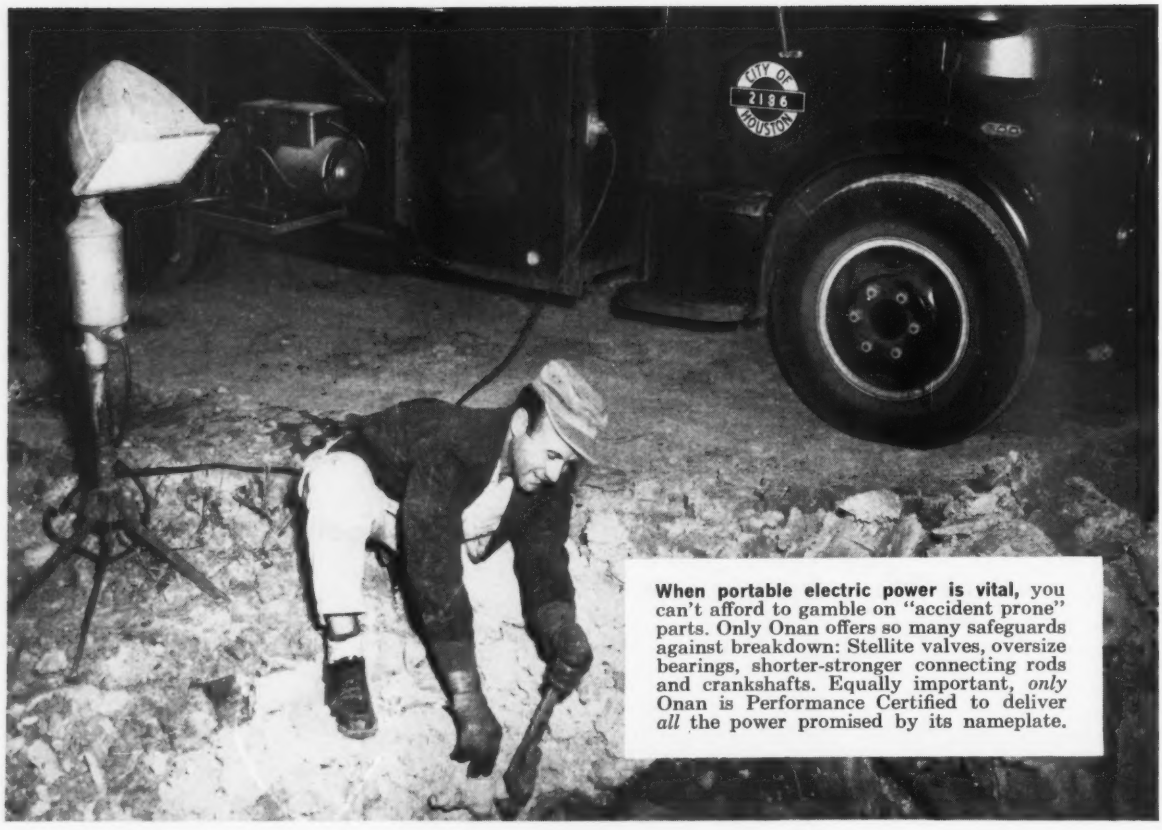
Spun formed to these PERFORMANCE specifications

ZERO TURNS ZERO WARP ZERO RISE

FABRIC FIRE HOSE COMPANY

SANDY HOOK, CONN.

IN CANADA *Pierre Thibault* CANADA, LTD., LTEE., PIERREVILLE, QUEBEC



When portable electric power is vital, you can't afford to gamble on "accident prone" parts. Only Onan offers so many safeguards against breakdown: Stellite valves, oversize bearings, shorter-stronger connecting rods and crankshafts. Equally important, *only* Onan is Performance Certified to deliver *all* the power promised by its nameplate.

Only Onan is certified to give you all the power promised by its nameplate

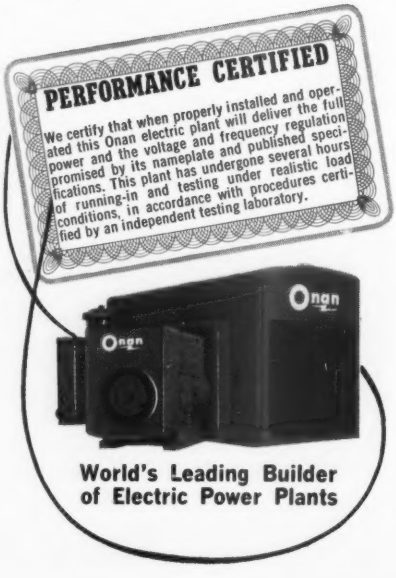
It's a fact that many electric plants on the market today do not deliver the output promised by their nameplate rating.

Every Onan plant is given a rugged workout *under full load* before it is shipped—*your assurance* that the Onan you buy is ready for hard work the day you get it.

But this isn't enough. Independent laboratory inspectors pull surprise inspections to double-check our tests and testing methods. They pull a plant off the line, run it, stop it, load it, overload it, check and recheck. Their torture test gives positive proof of Onan's quality. End result: *Onan's exclusive Performance Certification* . . . your assurance of getting every watt of power you pay for.

So when you're tempted by an electric plant "bargain," make sure its nameplate rating is not "inflated." Be sure you're getting full measure for your money. Remember, *the electric plant that shortchanges you in power output is no bargain at any price!* Only Onan is Performance Certified to deliver everything the nameplate promises.

See Onan electric plants soon. Compare before you buy. You'll find your Onan distributor listed in the Yellow Pages. Call him or write direct.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We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.
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ONAN Division, Studebaker-Packard Corporation, 2537 University Ave. S. E., Minneapolis 14, Minn.

Photo courtesy Petersburg, Virginia Fire Department.

The hose that doesn't blow out when you need it most

Long-lasting B.F.Goodrich hose pays off when the pressure's on

"DOESN'T blow out when you need it most"—that's the main reason B.F.Goodrich hose is used exclusively by the Petersburg, Virginia Fire Department.

Chief J. N. Farmer goes on to say, "I first bought B.F.Goodrich hose in 1941, and have not bought any other brand since then. BFG hose is stronger. We've never had a length of it blow out under pressure. I think it lasts at least twice as long as any other hose available."

Chief Farmer is right. B.F.Goodrich hose is stronger, and at the same time, lighter, more flexible, too. That's because of the "filler" cords of Dacron fiber which go around the hose and carry the load under pressure. Dacron cords are thinner, and three times stronger than cords used in ordinary hose. As a result, B.F.Goodrich hose not only lasts longer, but is easier to handle, coils tighter, is more compact. Hundreds of extra feet can be racked on a truck.

The extra minutes needed to get heavy, bulky hose into action, or replace a blown out section or put on more hose for longer lines are all it takes to wipe out the money saved on so-called "just as good as" hose. The quality features in B.F.Goodrich hose that prevent these delays add only a few cents per foot to its cost, but are worth much more when the pressure's on.

Next time you need fire hose, be sure and talk to a B.F.Goodrich distributor before you buy. You'll save money with longer-lasting BFG hose. *B.F.Goodrich Industrial Products Co., Dept. M-964, Akron 18, Ohio.*

B.F.Goodrich

FIRE HOSE

375
Mack

FIELD OUTLETS

give Mack service and parts leadership among apparatus manufacturers

If your department has ever reported apparatus out of service for mechanical reasons, how long did you have to wait for parts and service?

This question looms large in almost every department, for rare indeed is the department with an excess of first line fire-fighting equipment. So rare, in fact, that it is imperative that apparatus be kept in top-notch shape . . . that it be maintained and returned to service with the greatest dispatch. No department can afford equipment out of service for any length of time.

If you operate Mack apparatus you know that, among apparatus manufacturers, Mack offers the most complete, the most widespread chassis parts and service system in the nation.

You know, too, that a part which might normally take two or three weeks to arrive from the manufacturer can usually be found in the stock of any one of 375 Mack branches and distributors all over the nation.

Keep parts and service availability in mind next time you specify apparatus . . . make it one of the requirements . . . and you'll settle for nothing less than a Mack. With such complete coverage . . . and with the reputation Macks have earned in fire-fighting performance . . . it is no wonder Mack apparatus is widely regarded as the finest.

Mack Fire Apparatus, Allentown, Pennsylvania. Mack Trucks of Canada, Ltd., Toronto, Ontario.

MACK

FIRST NAME FOR

FIRE APPARATUS

Complete line of pumpers—500 to 1250 GPM . . . Squad and hose wagons . . . Aerials 65′ to 146′ . . . Combination ladder trucks

"SUPER-FORGE"

THREE "SENSIBLE LUGS" ON BOTH MALE AND FEMALE . . . WITH HIGBEE INDICATORS.

. . . AVAILABLE IN BOTH 1½- AND 2½-INCH SIZES . . . THEY ARE LIGHTER . . . NON-CORROSIVE AND MORE DURABLE . . . THEY ARE *DROP FORGED*.

POWHATAN
BRASS & IRON WORKS
RANSON, WEST VIRGINIA
In The Same Location Since 1892

MOTOROLA SAVES THE SECONDS...

THAT CAN SAVE LIVES!

It may only take a minute to get word to those men inside the building—but that's too long—if a wall is going down in thirty seconds.

That's when Motorola portable radio equipment pays off—in **lives.** With Motorola "Handie-Talkie" radiophones or VHF pocket radios you are in constant contact with your men—even when they are on foot and alone in some inaccessible and hazardous situation.

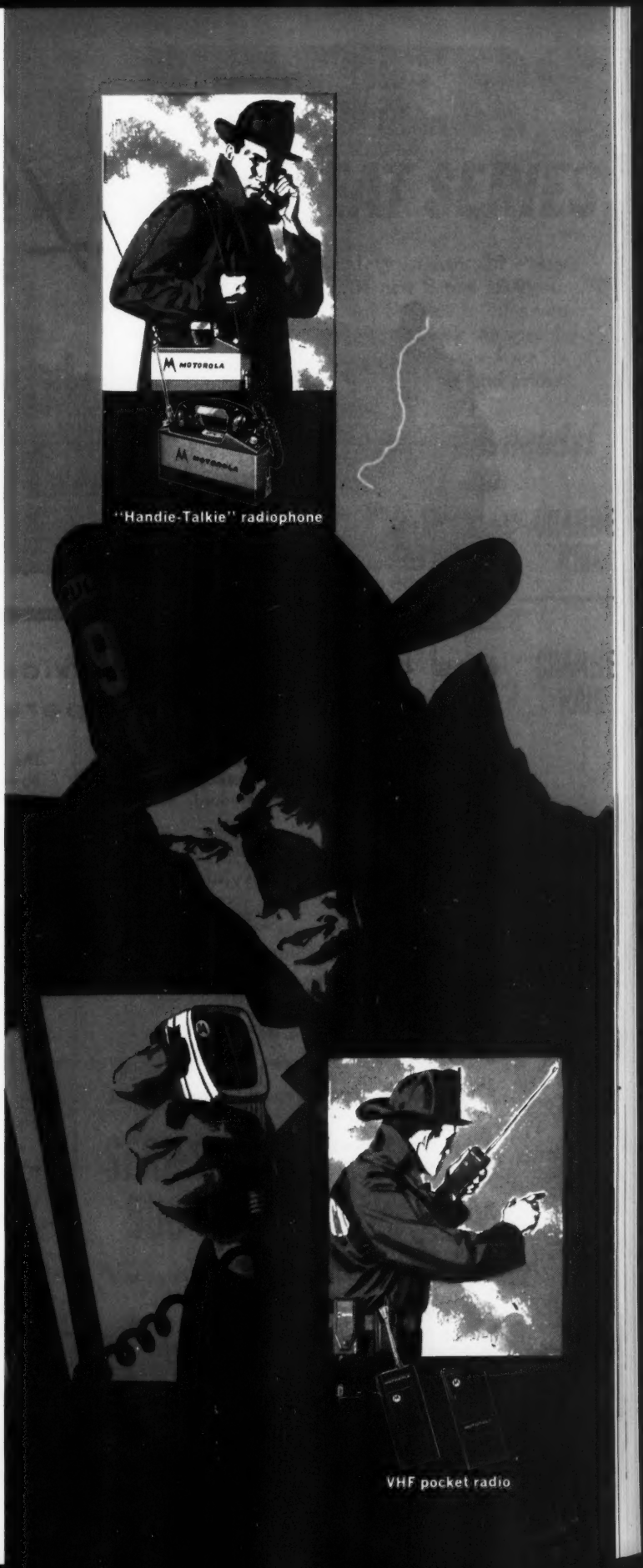
Just think how this extension of your communications system increases your **control** at a fire. Now every man—wherever he is, in or around a burning building can be directed instantly. You can now have the **completely** coordinated teamwork so vital to saving property and minimizing risks.

The new Motorola Pocket Radio is completely transistorized. Integrated into your present mobile system, it provides you with an electronic "life-line" from headquarters or from officers on the scene to every man in any situation.

There's so much that's new about Motorola 2-way radio—mobile portable and pocket radio—you'll want all the up-to-date facts.

Write today for complete descriptive literature—or call your local Motorola representative.

"Handie-Talkie" radiophone



VHF pocket radio

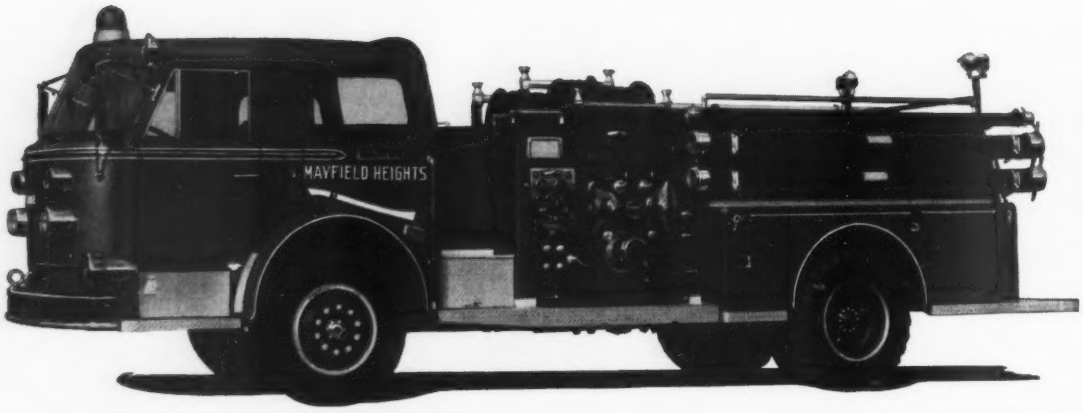
MOTOROLA

MOTOROLA COMMUNICATIONS & ELECTRONICS, INC.
A SUBSIDIARY OF MOTOROLA INC.
4501 AUGUSTA BLVD., CHICAGO 51, ILLINOIS

"Handie-Talkie" is a trademark of Motorola Inc.

AMERICAN LAFRANCE

Leadership



has given the Fire Service the most important features for greater operating efficiency

Many of these important Extra Value features engineered and introduced by American LaFrance have become a fire service standard. Some of these features are:

- **Cab-Ahead-of-Engine Design:**
  - **Greater safety and better visibility for the driver**
  - **5 man seating**
  - **Shorter turning radius**
  - **Equipment compartments — 7 enclosed, 2 open.**
- **300 gallon water tank, standard.**
- **Shock absorbers front and rear.**
- **Most complete power range of conventional engine sizes.**
- **Gas turbine power.**
- **Torque converters.**
- **Twinflow pumps for all NBFU ratings.**

The SPARTAN 1000 g.p.m. Class A pumper shown above includes these features plus many others. The ability of American LaFrance to engineer your specific requirements into custom built fire engines is indicated by the following features incorporated in this fire engine:

- A closed compartment for housing pre-connected 3 inch soft suction (22 feet long coupled 2½ inch) each side of the body. This provides for faster hydrant connection with weather protection for the hose.
- Enclosed rear compartment for an air and oxygen mask with shelves for spare cylinders storage.
- Seat belts for 5 men — Power steering.
- Discharge pressure gauges for each outlet.
- Two pre-connected 1½ inch hose lines.
- 2-way radio in enclosed compartment.
- Hobbs hour meter to record hours of engine operation.
- All 2½ inch discharge outlets angled for easier hose connection.

Everything you need to fight fire!

AMERICAN LAFRANCE

A DIVISION OF STERLING PRECISION CORPORATION

ELMIRA, N.Y.

LaFrance Export Corporation
Elmira, N.Y.
LaFrance Fire Engine and Foamite, Ltd.
Toronto 18, Ontario, Canada

The World's First and Largest Makers of Fire Fighting Equipment

DUO Safety

FIRE LADDERS

Now in FOUR GREAT SERIES

With DUO-SAFETY Exclusive Tongue and Groove Construction

No Hooks or Guides to Injure Hands!
No Jack-knifing!

Now, there's a Duo-Safety Ladder for every budget...for every use. The new Series 1200—an intermediate ladder—fills out the line to offer you a bigger choice of better ladders. Check the specifications below...you'll find the ladder for your requirements. Write for more information and prices.

Choose the Series to fit your needs!

SERIES 1000	For Pumper Use	24′ to 30′	2¾″ CHANNEL RAIL
SERIES 900	For Pumper and Service Trucks	24′ to 40′	3¼″ CHANNEL RAIL
SERIES 1200	For Service Trucks	35′ to 55′	3¾″ CHANNEL RAIL
SERIES 500	For Service Trucks	10′ to 60′	TUBULAR RAIL

Including the new

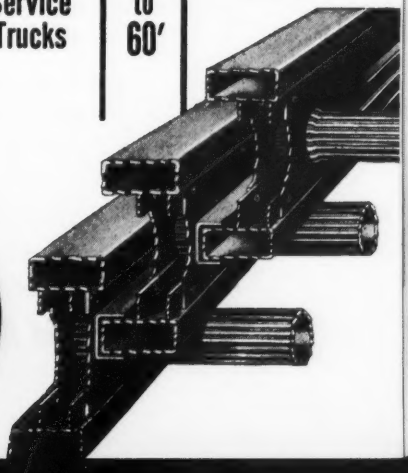
INTERMEDIATE SERIES 1200

The new 1200 Series at budget fitting prices in the famous Duo-Safety line is an intermediate ladder to take care of a range of sizes where requirements are not sufficiently severe to necessitate buying the Duo-Safety heavy duty 500 Series tubular rail!

Write for complete information and prices!

For Great Strength, Extraordinary Safety!

Adapted nationally by fire departments as standard ladder equipment, the 500-A Series represents perfection of ladder design. Light weight, greater strength and extraordinary safety are incorporated into the Tubular Rail Construction of this great ladder. Available in all standard ladder sizes 10′ to 60′.



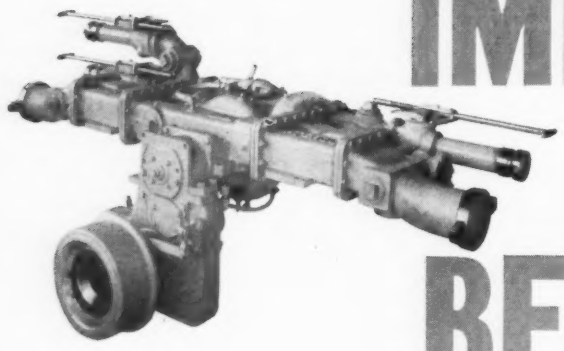
DUO Safety

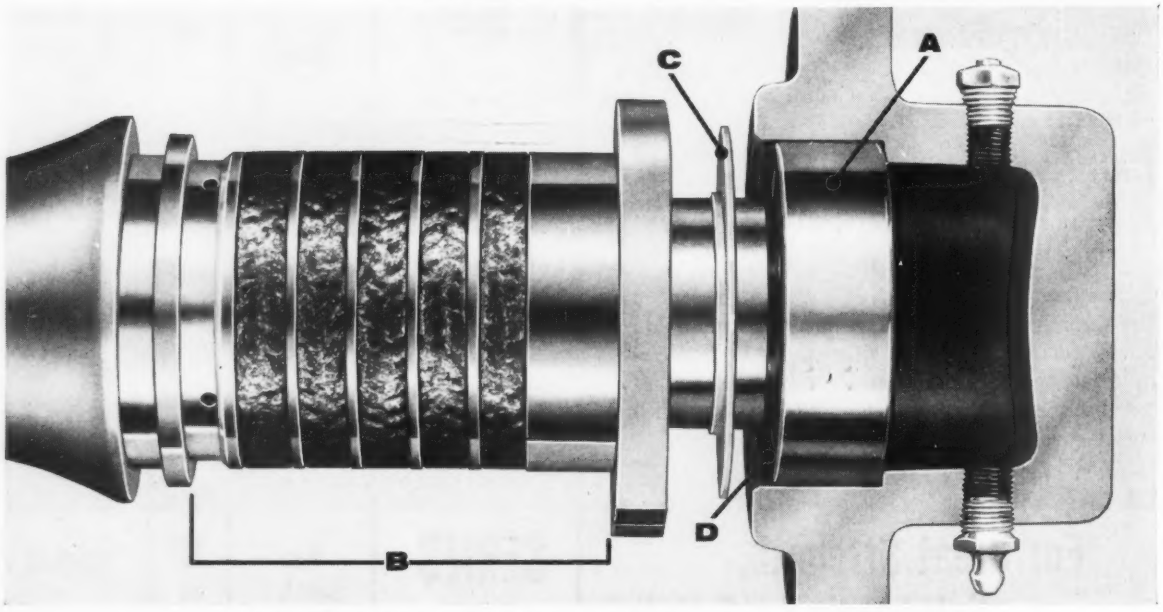
DUO SAFETY LADDER CORP.

513 WEST NINTH AVENUE • OSHKOSH, WISCONSIN

In Canada: La France Fire Engine and Foamite, Ltd., Ontario

WATEROUS IMPELLER SHAFT BEARINGS RUN IN OIL





Illustrated above is one of many features of superiority of WATEROUS series-parallel pumps. The impeller shaft is supported at *each end* by ball bearings (a) which run in oil. Bearings are protected from water and sand by stuffing box (b), flinger ring (c), and oil seal (d).

WATEROUS fire pumps are backed by a heritage of seventy-five years of priceless experience and service. That's just one reason why they are standard equipment on most well known makes of fire apparatus.

Specifications and literature on request.

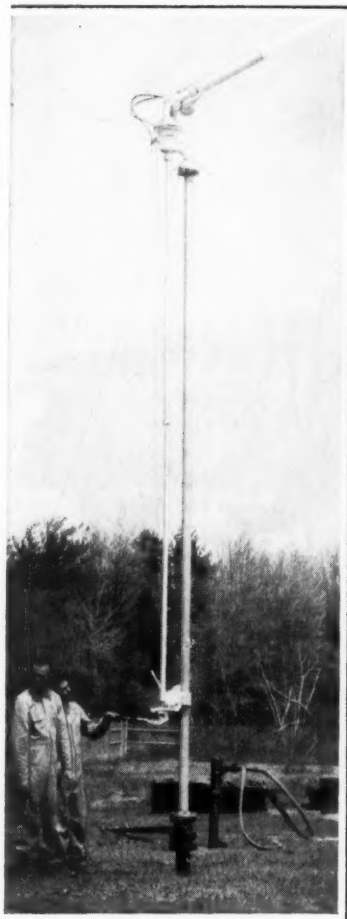
WATEROUS COMPANY

80 East Fillmore Avenue • St. Paul 7, Minnesota, Dept. 3F14

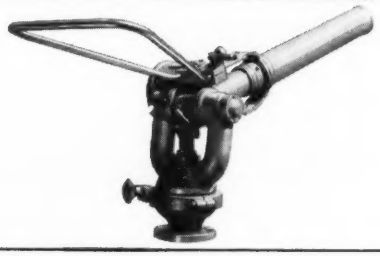
ANNIVERSARY 75 WATEROUS SINCE 1886

Most Complete Line of Specialty Turrets on the Market!

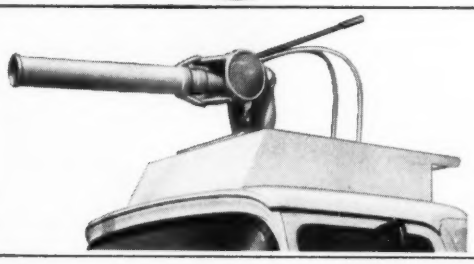
...All Rockwood Turrets Discharge FogFOAM
Solid FOAM Stream — WaterFOG — Solid Water Stream



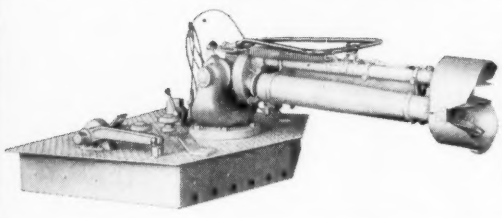
Extended Manual Control Type — Turret nozzles extend 10 to 20 feet above remote control station on deck or ground on standard units . . . greater remote extensions for special applications.



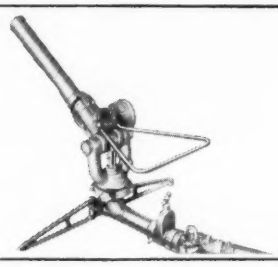
Direct Manual Control Type — Gives fire fighters "out-in-the-open" control from cab roof!



Remote Manual Control Type — Easily handled by man in driver's seat. Ideal for fast action!



Remote Hydraulic Control Type — Power-controlled from within the cab. Single and dual models. Widely used on air crash rescue fire-fighting trucks.



Portable Type — Off the truck and into action in seconds! Goes wherever a fire fighter can bring the proper hose line into action!

On the truck or on the ground, fire fighters can hit fires *harder* using ROCKWOOD Turrets! At airports and refineries . . . in municipalities and throughout industry . . . these advanced-design fire-fighting aids are constantly proving their ability to extinguish fires faster.

ROCKWOOD Turrets provide plenty of volume *and* versatility. What's more, all are easily adjustable on the fire line to meet changing fire conditions. Produced by the world's largest manufacturer of specialty Fire-Fighting Turrets, they're designed to give fire fighters an extra edge of efficiency on most types of fires. Get full details on the complete line of fire-fighting products. Write ROCKWOOD SPRINKLER COMPANY, Portable Fire Protection Division, 448 Harlow Street, Worcester 5, Massachusetts.

ROCKWOOD SPRINKLER COMPANY

A Division of The Gamewell Company
Subsidiary of E. W. Bliss Company

Engineers Water ... to Cut Fire Losses

Distributors in all principal cities.

BOARDMAN BUILDS THE PUMPER YOU NEED!

Firefighters in over 200 American communities have found that Boardman builds the pumper that suits their needs *best* . . . because Boardman builds to exact specifications! Boardman pumpers have the features and equipment you need, mounted on the standard chassis of your choice, for quick local service. Your choice of pumps—the Waterous 500 GPM one-, two- or three-stage or the Waterous 750 GPM two- and three-stage—assures the right capacity for your city's needs. And though your pumper will be custom-designed, you'll pay far less than a "custom-built price" at Boardman!

Let Boardman answer your city's fire alarm with the illustrated brochure, *Boardman Fire Fighters,* describing every pumper and tanker in their line. If your need is urgent, place a collect call for immediate details.

BOARDMAN PUMPERS

THE BOARDMAN CO
P. O. BOX 1152
Oklahoma City

one-man foam station

provides "first-aid" foam protection till your heavy equipment arrives

Does your plant rely on mobile equipment . . . foam trucks or cumbersome chemical foam equipment . . . to fight fire in hazardous locations such as pump house and manifold pit areas, truck and tank carloading racks, marine docks?

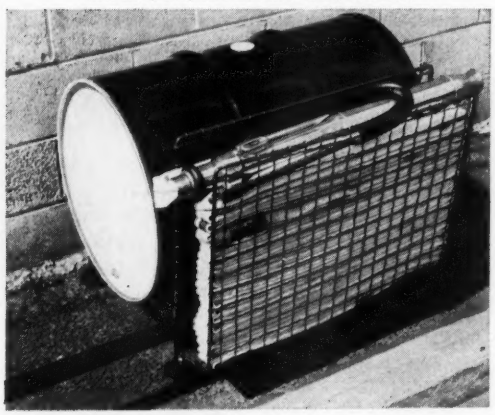
If so, you'll want to know about the National Aer-O-Foam Station. This new, compact, economical unit can be installed permanently near each hazard, ready to produce foam instantly and control the fire until the big equipment arrives.

Operated by only one man, the Aer-O-Foam Station delivers up to 600 gpm of tough foam for as long as 30 minutes. Ask for full details from your nearest National Foam office or distributor.

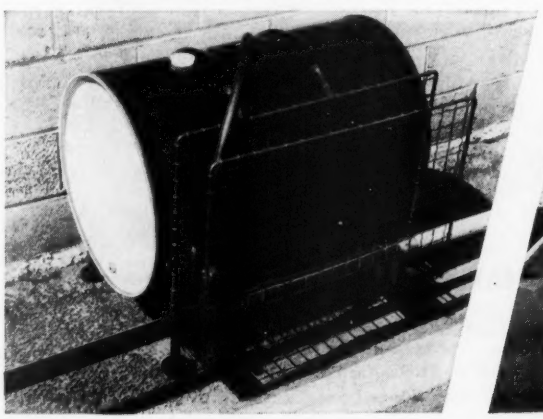
National Foam System, Inc.
West Chester, Pa.

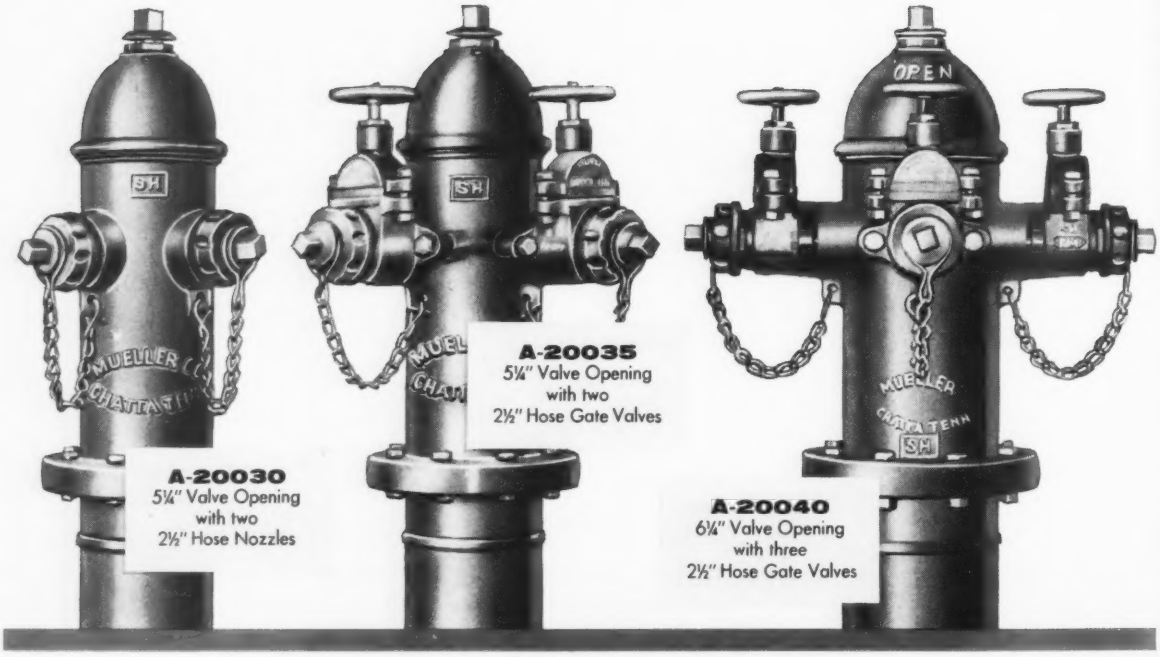
Cover, easily removed, provides all-weather protection.

Hose and pick-up tube are stored in adjacent rack.



With hose stripped out and pick-up tube inserted in 55-gallon drum, water valve is opened. Foam is produced in seconds!





recommend MUELLER® fire hydrants
...for private fire protection systems

■ Maintain the quality of your fire protection program by recommending these special Mueller hydrants for private fire protection systems in your area. These fully-approved hydrants are specifically designed to meet industrial requirements and permit lower fire insurance rates.

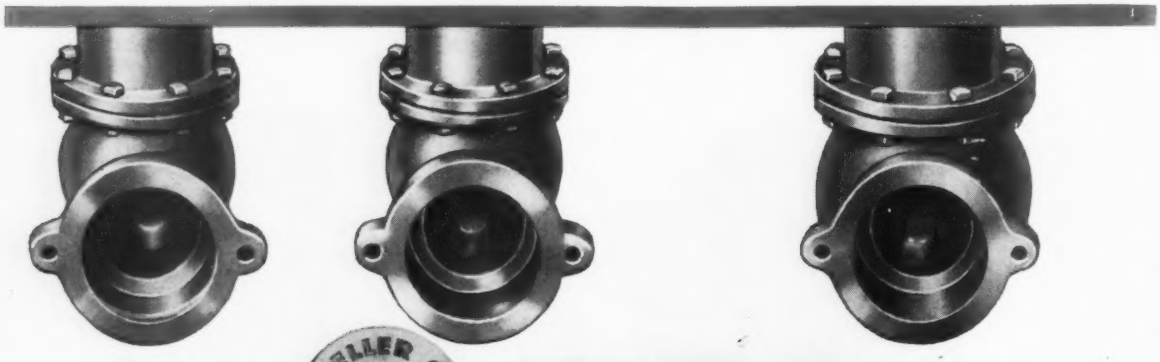
To insure compatibility with your equipment, insist that the hose nozzles of *all* private hydrants in your area have the same threads as your municipal hydrants. If you are now using Mueller Hydrants in your municipal system, all necessary thread data is in our files. No sample is needed to match these threads perfectly on the hose nozzles of private hydrants.

Take advantage of Mueller's century-plus experience in the design and manufacture of quality water works and fire protection products... and insure dependable operation of your over-all fire protection program with "quality-matched" equipment. Write for full information.

Listed and approved by:

Underwriters' Laboratories, Inc.
Factory Mutual Laboratories
Marked: SH-FM

- 150 p.s.i. Working Pressure
- 300 p.s.i. Test Pressure
- Full line of inlets available



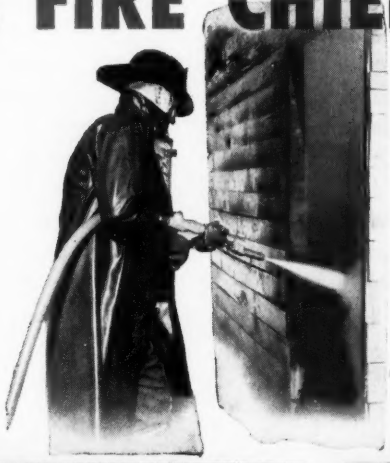
MUELLER CO. since 1857 SERVING the Water and Gas Industries QUALITY

5804

MUELLER CO.
DECATUR, ILL.

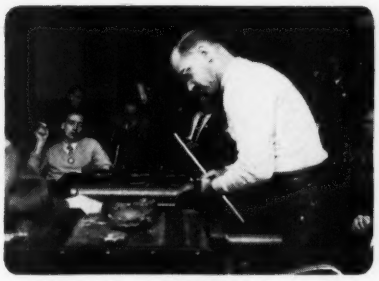
Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited, Sarnia, Ontario

A FIRE CHIEF GOES TO SCHOOL

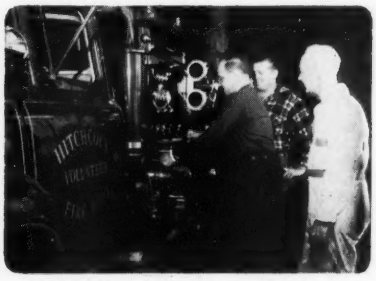


Typical of the thousands of fire chiefs and crewmen that each year attend the John Bean Fire School, Chief A. G. Terrabonne of Hitchcock, Texas is seen here as he completes his course with a group of fellow firemen from all parts of the country. Chief Terrabonne knows that keeping abreast of modern fire-fighting methods, like the John Bean High-Pressure Fog System, is the surest way to guarantee his community the safety and protection with which he is entrusted. That's why this free training by John Bean fire-fighting experts is available the year 'round to you and your men as a part of the regular service that goes with every John Bean truck. Put yourself in Chief Terrabonne's place as he is seen below in some of the many stages of his own training.

ADVANCED FEATURES of the John Bean Firefighters are first learned in the classroom, where Chief Terrabonne and his group study the proper function and operation of the equipment they will soon be using.



FIRST-HAND EXPERIENCE is an important part of each fireman's training at John Bean. Here Chief Terrabonne learns the proper care and maintenance of his new equipment by actually doing the work himself under expert supervision.



GETTING THE FEEL OF IT! Following a day in the classroom, Chief Terrabonne and one of his crewmen, Cecil Cruse, receive individual training from factory specialists on the operation of their own equipment.

LIVE FIRE FIGHTING of both Class 1 and Class 2 fires is practiced by each student at the John Bean proving grounds. Here, Chief Terrabonne quickly knocks out a building fire with John Bean High-Pressure Fog.

BURNING OIL TANK . . . . one of the most difficult of all fires to combat . . . is easily and quickly put out by members of Chief Terrabonne's group with the triple action of John Bean High-Pressure Fog.

18 GALLONS OF WATER—18 SECONDS LATER . . . and the raging fire in this 18 x 36 foot oil pit is completely extinguished! Dramatic proof of what John Bean High-Pressure Fog can do when the going is rough.

BETTER EQUIPPED — BETTER TRAINED! As Chief Terrabonne and Cecil Cruse take delivery of their new truck and return to Hitchcock, Texas, the people there can well be thankful. For with them they bring the confidence and skill to give their community the hard-hitting, split-second protection for which John Bean is known the world over.

See your John BEAN representative, or write today to arrange for a High Pressure Fog Fire Fighter demonstration

JOHN fmc FOOD MACHINERY AND CHEMICAL CORPORATION ® **BEAN**

Dept. 126
Lansing 4, Michigan

P. O. Box 145
San Jose 3, California

A DIVISION OF
FOOD MACHINERY and CHEMICAL CORPORATION

The 1961 S&S Professional Cadillac Ambulance is precision engineered to incorporate every service and comfort feature available through automotive science *and* deliver the finest ease-of-handling on the road today. We challenge you to tell us where this ambulance can be improved! Since it would be impossible to detail every feature even in twice this space, we invite you to write for complete specification sheets. Then you tell us if there is a feature we have missed — or if you agree that the 1961 S&S Ambulance is the finest professional rescue equipment you have ever seen. The Hess & Eisenhardt Company, Cincinnati 42, Ohio.

Is there a feature missing

in this
1961 S&S Professional
Cadillac Ambulance
?

Storage? An S&S has more compartments than ever and not one of them interferes with the largest working area in the industry. And here is the only left-hinged door for convenient curbside loading. Here, also, is a hint of the sculptured-in-steel rear design that is distinctively S&S.

Emergency? Here is big, 5-patients-and-attendant capacity, and a new standard of comfort in the floor length, even-distribution heating system, an S&S exclusive. Here is new convenience with the exclusive S&S Automatic Locking Cot Fastener that does not require moving a hand from the cot.

From the timeless beauty of sculptured styling to the smallest interior detail, an S&S ambulance is the product of 85 years of advanced engineering and dedicated craftsmanship. Only S&S gives you the stability and safety of body and chassis "Monotized Construction."

the tradition of leadership... S&S

GET ON THE BALL WITH

INDIAN FIRE PUMPS

"The World's Best"

Miss Jean Moorhead, a former Miss Hollywood and entrant in the Miss Universe contest.

No fire fighting equipment is complete without an ample supply of **INDIAN FIRE PUMPS!** These all purpose back-pack extinguishers have been first choice for over 30 years! Many pumps bought 25 years ago are still in service.

When you buy **INDIANS** you get the best portable fire fighters that can be made . . . a product of a company founded in 1888. **SAVE TIME . . . SAVE MONEY . . . SAVE EFFORT** . . . always use **INDIAN FIRE PUMPS!**

"Most Enthusiastic About INDIANS"

"We have a number of No. 90 solid brass **INDIAN FIRE PUMPS** on all our equipment. We prefer them to any other hand extinguisher. The men will not use anything else. We are most enthusiastic about **INDIANS**."

George P. Lasher,
Fire Chief

THREE GREAT MODELS TO CHOOSE FROM

No. 90 INDIAN FIRE PUMP

The popular sliding pump type with Armco Zinc Grip steel, solid brass or chrome tanks.

No. 80 MODEL

For those who prefer the lever type pump and handle. Armco Zinc Grip steel, solid brass or chrome tanks.

NEW FIBERGLASS No. 90 MODEL

Nothing else like it. Light weight but strong and durable. Will not rust or corrode. Solid brass pump. Circular on request.

ALL TYPES APPROVED BY FACTORY MUTUAL

SEND FOR NEW CATALOG

D. B. SMITH & CO. "FOR 73 YEARS THE LEADERS" **406 Main St., Utica 2, N.Y.**

Pacific Coast Branches:

Hercules Equipment & Rubber Co., Inc. San Francisco 7, Calif. San Jose, Calif.
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C. E. Hickey & Sons, Ltd. Hamilton, Canada

NEW LEECE-NEVILLE 40-AMP ALTERNATOR

6000-series alternator answers the need for adequate electrical power at lower cost

Leece-Neville, since 1946 the pioneer and leading supplier of alternators for heavy duty automotive service, announces a new, compact 40-Ampere alternator priced in line with comparable DC generators.

If you experience costly battery failures and other electrical system troubles with vehicles in your fleet, but feel that the money difference for 50 to 60-Ampere alternators previously available is too much to justify in your type of operation, Leece-Neville's new 6000-Series Alternator is the ideal solution. Under normal operating conditions, this power-packed alternator has a 40-Amp rating, and delivers 5 to 10 amperes at curb idle. With this unit, your battery is used only for starting the engine, remains charged at all times.

The new L-N 6000-Series Alternator is backed by Leece-Neville's 14 years of extensive field experience with heavy duty alternators, and by a 50-year reputation for building quality electrical equipment. Designed and constructed to Leece-Neville's usual heavy duty concepts, it will be available as factory-installed special equipment through almost all vehicle manufacturers.

RUGGED DESIGN... QUALITY CONSTRUCTION... HIGH PERFORMANCE AT LOW COST

- Compact and lightweight for savings in both space and weight.
- High performance 40-Amp rating at low cost in line with comparable DC generators.
- 5 to 10 amperes at curb idle.
- Replaceable built-in Silicon rectifiers mounted in separate high efficiency heat sinks, and protected from alternator heat (stator and rotor heat losses).
- Sealed anti-friction ball bearing at the drive end... efficient roller bearing at slip ring end.
- Slip ring assembly fully shielded to protect brushes and slip ring from contamination, assuring long life.
- Exclusive soldered connections between heat sinks and rectifier cells for better electrical and thermal conductivity.
- Silicon diodes (rectifiers) have built-in overload and high temperature capacity.
- Self-limiting current requires only simplified voltage regulator.
- Positive or negative ground types available.
- 6-volt types available.
- Reversible—clockwise or counter-clockwise rotation, limiting stock requirements.
- Heavy duty design concepts (protected windings, splash proofed, etc., at no extra cost to you).

TYPICAL TYPES OF SERVICE WHERE THE 6000-SERIES ALTERNATOR WORKS LIKE A TROJAN

Door-to-door Delivery
Taxis, Officials' Cars
Motor Freight
Civil Defense
Utility Companies
Construction
Ham Radio Cars
Suburban Police Units
Air Conditioned Cars
And many, many more—including your personal car!

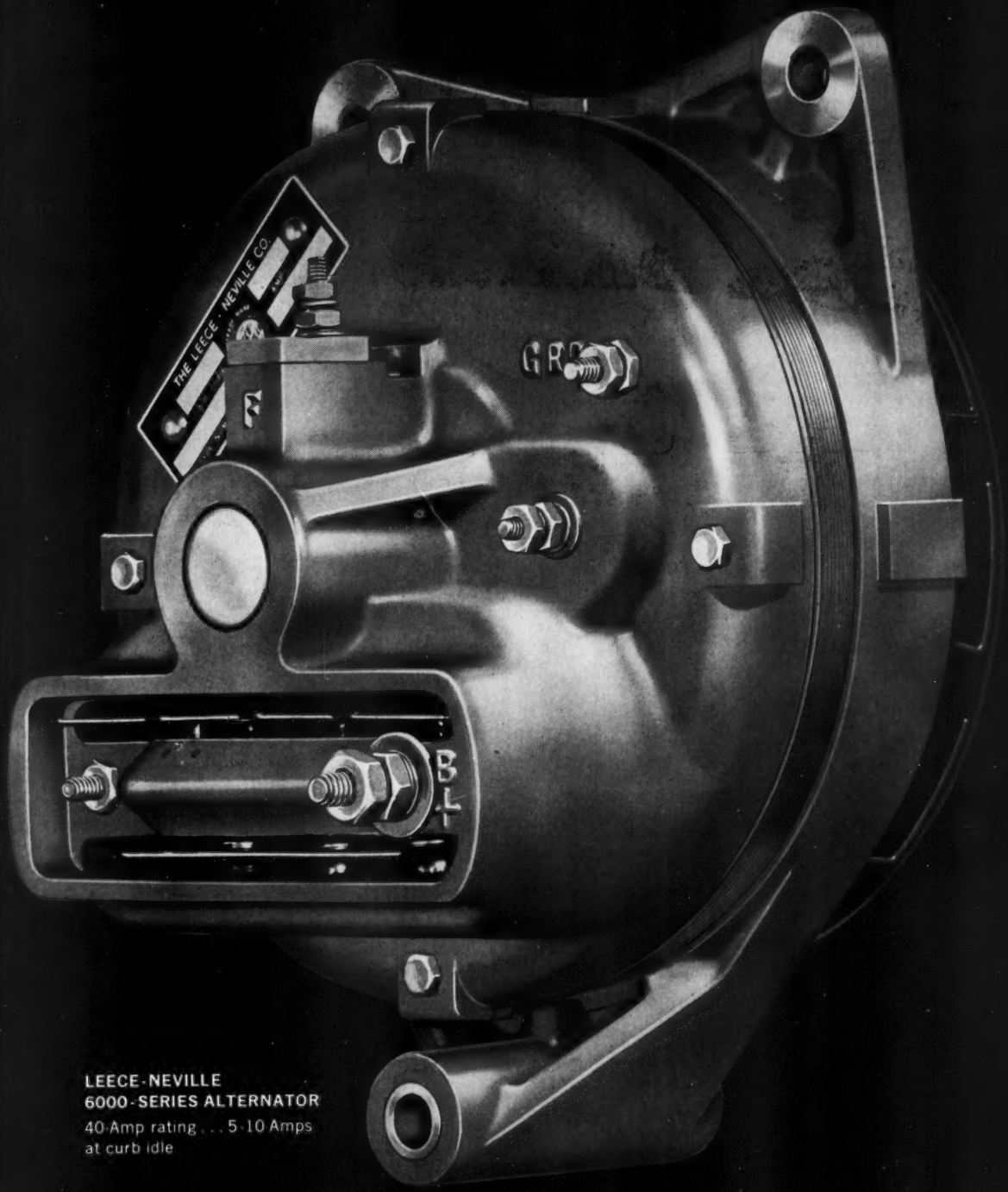
ALTERNATORS FOR ALL! Leece-Neville offers you alternators for *every* type of service, from passenger car to the biggest truck or tractor—all designed to save batteries, cut maintenance costs and practically eliminate downtime caused by electrical failure. For more information about the new 6000-Series Alternator, or alternators for heavy duty service, just mail the coupon at the left.

QUALITY ELECTRICAL EQUIPMENT
Leece-Neville
SINCE 1909

The Leece-Neville Company, Dept. FE-2
1374 East 51st Street • Cleveland 3, Ohio

Please send me more information on:
☐ 6000-Series Alternator
☐ Heavy Duty Alternators

*Name*_____ *Title*_____
*Company*_____
*Address*_____
*City*_____ *Zone*___ *State*_____
*Type of Service*_____

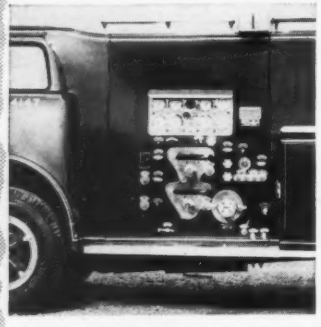


LEECE-NEVILLE
6000-SERIES ALTERNATOR
40-Amp rating . . . 5-10 Amps
at curb idle

COMPACT...LIGHTWEIGHT...
HIGH PERFORMANCE...LOW COST

Customer: Hillcrest Fire Dept.
Binghamton, N. Y.
Sold by: J. W. Vought,
Conklin, N. Y.

quad combination



Pump operator's panel properly arranged for most efficient use.

Compartmentation uses all available space. Note location of ladders.

One of the most versatile and complete fire-fighting units built for the fire service—**Quadruple Combination** includes pumping equipment, booster tank, ladders, and fire hose. . . . And to make it even more practical, the tilt-forward cab was used to provide minimum wheelbase, greater visibility, short turning radius, and better performance.

FEATURES

1. 750 gpm Model CM750 Electromatic Waterous Pump, with overrides and controls at pump operator's panel.
2. Well-designed compartments to utilize all space; compartments are air-vented to prevent mustiness.
3. Large center compartment in rear holds portable pumping unit. Two 2½" rear preconnected discharge outlets.
4. Two inserted helper steps at rear and folding helper steps at front of side compartments.
5. Ladders carried: 1-14 ft. 2 section; 1-28 ft. 2 section; 2-35 ft. 3 section; 1-24 ft. 2 section; 1-16 ft. roof; 1-20 ft. roof; 1-45 ft. 3 section.
6. Cross body chute above front of hose body extends out on each side to provide for two 150 ft. lines of 1½" D. J. hose with nozzle.
7. Famous cab to body streamlining.
8. 500 gallon booster tank.
9. 153" wheelbase.
10. Hose carrying capacity: 1200 ft. 2½" D. J. fire hose and 1300 ft. 1½" D. J. fire hose.

As with all HOWE fire apparatus, this truck was built to meet specific requirements—HOWE will customize your truck to meet your special requirements.

HOWE

HOWE

"dependable fire apparatus since 1872"

FIRE APPARATUS COMPANY

Dept. FE-261 1402 W. 22nd St., Anderson, Ind.

New WOOSTER UNI-FLO NOZZLE *simplifies fire fighting*

Wooster Uni-Flo Nozzles deliver the same GPM on all settings—straight stream and 15, 30, 60 and 90° fog patterns. Standardizing on Uni-Flo Nozzles makes firemen-training easier . . . simplifies and advances your fire-fighting technique. The man at the pumper knows exactly how much water to deliver at the nozzle, no matter what the nozzle setting. And the man at the nozzle can meet every fire situation by switching from straight stream to any fog setting, knowing exactly what pattern and stream force he will get. Wooster Uni-Flo Nozzles are ruggedly constructed to minimize wear and breakdown. Should service be needed, parts can be replaced in minutes without special tools.

You can select Uni-Flo Nozzles for hose in sizes from ¾″ to 2½″ and capacities from 18 to 250 GPM. The same sizes are also available as Uni-Flo Nozzle Tips for convenient "break-apart" use (as illustrated). Uni-Flo Nozzles and other Wooster brass fire equipment are available from Fyr-Fyter, Pyrene-C-O-Two and Buffalo industrial distributors and fire equipment specialists. Look for their local listings in your Yellow Pages under "Fire Protection Equipment." Or write to The Fyr-Fyter Company, Dayton 1, Ohio.

Chromed hard baffle plate and perforated edge produce dense, uniform fog patterns.

Non-slip rubber grip extends over edge to protect against impact.

Five positive, click-stop stream positions . . . entirely enclosed, can't freeze.

Smooth, easy turning at all pressures.

Rugged, rigid stream setting indicator.

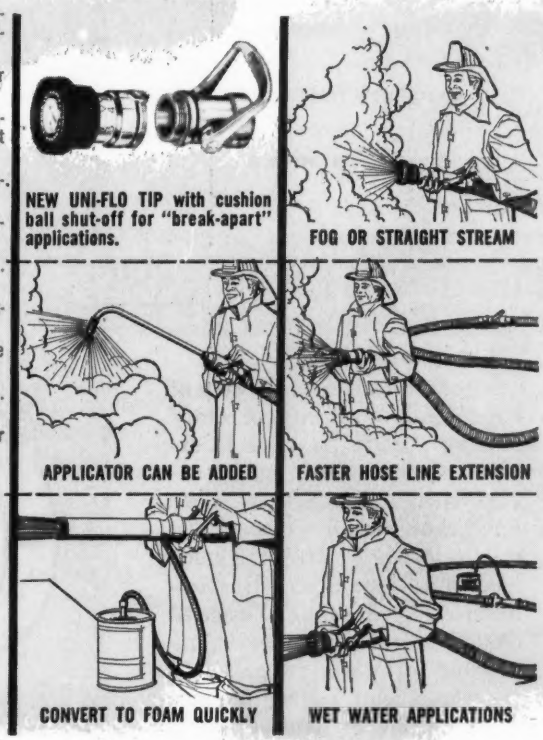
Cushion-ball shut-off control . . . easy action under all pressures.

Full diameter, non-interrupted waterway minimizes friction loss.

Double-stop provides positive valve alignment, open or closed.

Design minimizes clogging . . . clogging is easily freed.

New wide handle for gloved-hand operation.


NEW UNI-FLO TIP with cushion ball shut-off for "break-apart" applications.
FOG OR STRAIGHT STREAM
APPLICATOR CAN BE ADDED
FASTER HOSE LINE EXTENSION
CONVERT TO FOAM QUICKLY
WET WATER APPLICATIONS

Fyr-Fyter

WOOSTER BRASS
products of THE FYR-FYTER COMPANY

Branches: Atlanta, Baltimore, Boston, Chicago, Dallas, Dayton, Detroit, Los Angeles, New York, Newark, Philadelphia, Pittsburgh, Portland, Rochester, San Francisco, Toronto (Ontario). Representatives and Distributors in all principal cities.

Barton-American ENGINE VACUUM PRIMER

. . . another superior feature you get in American FIRE TRUCKS

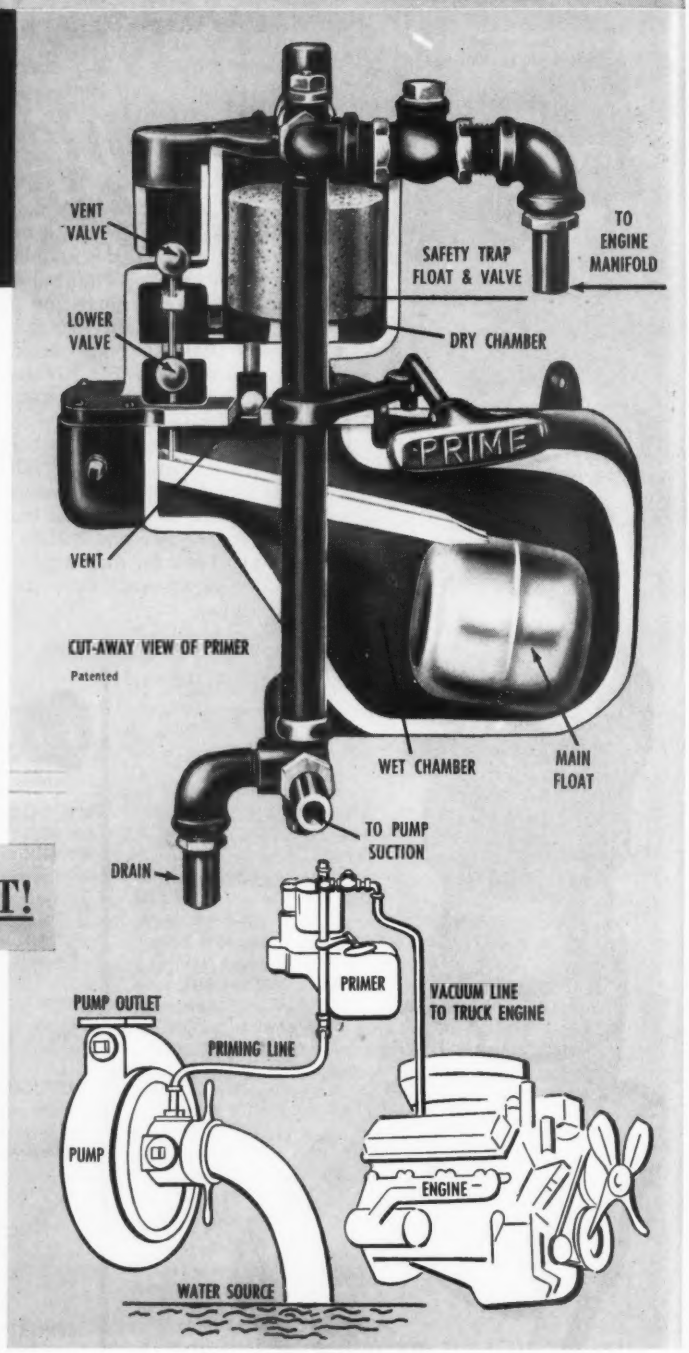
Always operates with like-new efficiency — not affected by engine wear

Employs a simple, trouble-proof principle

Requires no oil, no adjusting, no maintenance

Completely frost-proof

Always dependable



This PRIMER IS FAST!

The Barton-American has *none* of the many disadvantages of rotary priming pumps. Superior to exhaust primers, which require engine speeds as high as 3300 RPM, *the Barton-American readily primes at 1000 RPM.* If the truck engine will run, the Barton-American will prime. Patented dual float design makes it impossible for water to pass into the truck engine, eliminating possibility of engine damage.

For more details on this and other superior features you get in American Fire Apparatus — even though you don't specify them — see your nearest American representative.

American

AMERICAN FIRE APPARATUS CO.

FIRE APPARATUS CO.

Main Office: Main Street Rd., Battle Creek, Mich. Plants at: BATTLE CREEK, MICH., MARSHALLTOWN, IA., STRATFORD, ONT.

new

M-S-A® ONE-HALF-HOUR CHEMOX®

Try this new lightweight oxygen breathing apparatus on for size. Note the simplified design. Save on low operating costs. Watch the wearer's quick acceptance. Here's why:

PRESSURE RELIEF VALVE

Fully automatic — no manual operation required.

FACEPIECE

Monocular lens CLEARVUE* Facepiece provides unobstructed vision.

HEADBANDS

They're made of strong, long-lasting nylon.

BREATHING TUBE

Just a single short one. But close convolutions greatly extend its length for full head movement.

TIMER

Fully recessed for compactness. Rings continually for 17 seconds.

CANISTER

Round, simplified, inexpensive. Rated at 30 minutes. Materially reduces operating costs.

INSTANT OPERATION

An optional unit is now available for instant operation even at temperatures below zero.

CANISTER HOLDER

Easy acting lever holds canister securely in place—cannot open accidentally.

BREATHING BAG

"Picture-frame" type. Encircles the canister completely, providing full unrestricted flow.

HARNESS

Also strong, long-lasting nylon. Rides comfortably and lightly without hampering.

For a demonstration or technical bulletin on this new respiratory protective equipment, contact your MSA Fire Department distributor or the nearest MSA sales engineer. Write: Mine Safety Appliances Company, Pittsburgh 8, Pennsylvania.

*Trademark

MSA® SAFETY EQUIPMENT HEADQUARTERS

MSA backs up its label with selection, quality, research, experience

MIDWESTERN

Safety Clothing for Firemen

The Original STRIPED SAFETY COAT

The striped safety coat for firemen is an Original Midwestern development — first in the field — a leader ever since its introduction 19 years ago.

The BRILLIANT YELLOW stripes are actually rubberized into the black rubber . . . an exclusive feature that defies comparison with substitute or imitation models where the stripes are glued, sewed or painted on the material.

When working under hazardous conditions in smoke, fog, dust or darkness, firemen deserve the superior quality, design, comfort and safety features offered by the Original Midwestern Safety Coat.

Many Fire Chiefs who insist on the best of protection for the men of their department specify MIDWESTERN SAFETY garments to the last man because every outstanding Midwestern feature is original. All fabrics are extremely soft and flexible and have the qualities to stay that way at varying temperatures. You can always distinguish a MIDWESTERN SAFETY garment by the soft feeling of the material in both rubber and fabric type garments.

We have always designed and constructed our garments with the one thought . . . that every fireman deserves complete protection in his hazardous work of protecting life and property against the ravages of fire.

COMBINATION BUNKER SUITS

The many weights of both rubber coated and cloth type materials offered in our MIDWESTERN Quick-Hitch suit makes this combination ideal for all sections of the domestic market and export. Also, both coat and bunker pants may be purchased with or without detachable wool linings.

MIDWESTERN SAFETY MANUFACTURING CO.
Mackinaw, Illinois

☐ Have Midwestern representative call with complete information and prices.

☐ Send Free Catalog and fabric samples.

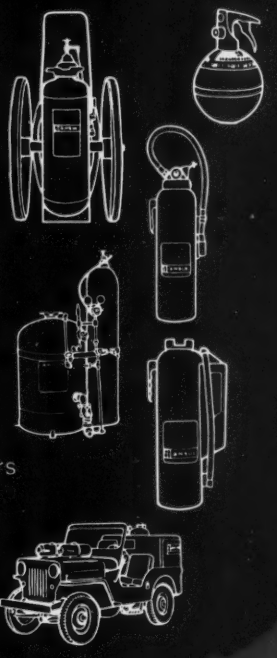
Name_____

Address_____

City_____ State_____

NONE GENUINE WITHOUT THIS TRADE

MIDWESTERN SAFETY MFG. CO., Mackinaw, Ill.
Located in the heart of the Greater Peoria Manufacturing Area
Manufacturers of the Famous MACKINAW Safety Coat



257 of the 500 largest U.S. corporations rely on ANSUL for basic fire protection. Thousands of other companies, large and small, have found the right answers to their fire protection problems in Ansul's complete line of fire extinguishing equipment.*

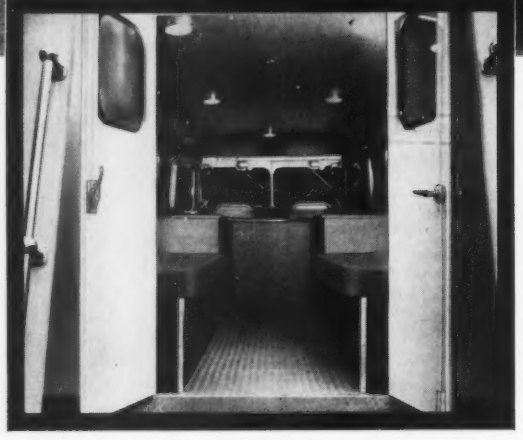
We'll be happy to send you our latest catalog describing in detail Ansul's line of hand portable dry chemical, carbon dioxide and water extinguishers, wheeled, stationary, mobile units and automatic systems.

Your local Ansul Man is a trained fire protection expert, available to survey your plant and counsel on your fire protection requirements. Call him for an appointment (he's listed in the "Yellow Pages") or write ANSUL CHEMICAL COMPANY, Marinette, Wisconsin.

ANSUL

Fire Equipment
Refrigeration Products
Industrial Chemicals

IS THIS THE STYLE FIRE-RESCUE UNIT YOUR DEPARTMENT NEEDS?



Fort Worth rescue squad enjoys extensive storage compartments without sacrificing first aid facilities!

Fort Worth uses this new custom-built Gerstenslager rescue unit to answer all alarms along with the regular fire-fighting units. It carries special equipment for breaking into burning buildings, provides ample cot capacity, first aid facilities and a variety of other tools for their type of operation.

This completely enclosed unit is well insulated and ventilated for year-around comfort. Inside cabinets store first aid equipment, other material is stowed in outside-opening compartments.

Gerstenslager can custom-build a fire rescue unit that is just right for your local needs. Write, wire or phone now. A nearby and experienced representative is ready to help you with your planning. There's no obligation.

THESE ARE SOME OF THE FEATURES!

International Harvester chassis B-164 with 171" wheelbase. Low silhouette and low center of gravity. Leece-Neville alternator with a 1200 watt capacity 110 volt transformer for floodlighting. Extensive compartmentation makes all tools and equipment quickly available. Fully equipped with all proper warning and signal lights. Federal Model C-5 Siren.

THE GERSTENSLAGER COMPANY FOUNDED 1860 — DEDICATED TO 100 YEARS OF TRANSPORTATION

GERSTENSLAGER

THE GERSTENSLAGER COMPANY • WOOSTER, OHIO • PHONE AN 2-2015
CUSTOM BODIES SINCE 1860

TOUGHEST HOSE GOING

It's jacketed 100% with DACRON®

Draw it through rubble . . . stomp on it . . . splash it with chemicals . . . soak it in water—hose jacketed 100% with "Dacron"* polyester fiber can really *take it!* In one test, hose of "Dacron" was ready for immediate action after being dragged 2.5 miles over asphalt. A cotton hose was unserviceable after the same torture treatment.

"Dacron" is so tough it cuts your hose replacement costs to the bone. And jacketing of "Dacron" makes your hose more flexible, easier to handle. You save time, too, because you can always repack hose of "Dacron" wet without damage from mildew or rot.

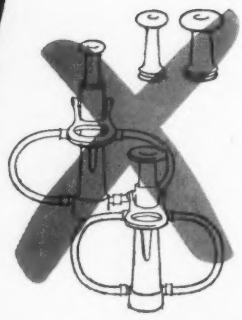
Be sure to insist on hose of "Dacron". See your supplier now . . . or write to E. I. du Pont de Nemours & Co. (Inc.), Textile Fibers Department, D. M. 16621, Third & Greenhill Avenues, Wilmington 98, Delaware.

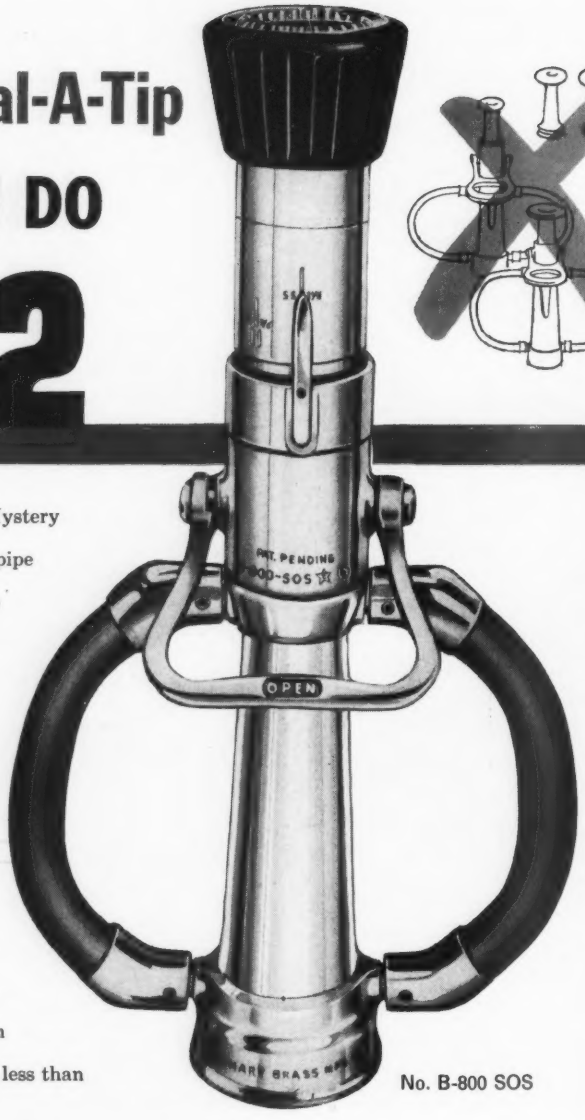
*"Dacron" is Du Pont's registered trademark for its polyester fiber.

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*

1 ELKHART Dial-A-Tip NOZZLE CAN DO THE JOB OF 2





No. B-800 SOS

It's a fact. This new patented Dial-A-Tip Mystery Nozzle can replace two nozzles: (1) The Underwriters' required straight stream playpipe combination, and (2) The old style fog playpipe combination. Saves time at the fire scene . . . saves space on the pumper . . . saves money, too! This nozzle has three calibrated straight stream positions: ⅛", 1" and 1⅛" which at 100 p.s.i. nozzle pressure throw 175, 225 and 250 G.P.M. respectively. It is also rated at 275 G.P.M. at 30° fog at 100 p.s.i. *These gallonages are verified by Underwriters' Laboratories tests.* Actually, any gallonage can be dialed in the straight stream position from 250 G.P.M. down to that of of a booster hose. In addition, the nozzle has an adjustable seat, raised stream indicators and Mystery nozzle teeth. An important design feature of the B-800 SOS places approximately 80% of its weight in front of the playpipe handles. This helps balance the weight of the hose and makes it easier to handle. By making the shutoff an integral part of the playpipe, the weight of this nozzle has been reduced 20% to 25% less than comparable playpipe combinations.

We have contacted rating bureaus in many sections of the country and have been assured that if a department were to substitute the No. B-800 SOS for the required straight stream stacked tip nozzles, they *would not be penalized* in the grading of their departments. We urge you to contact the insurance Rating Bureau in your state for verification.

Dial-A-Tip Direct Connection Nozzle

Elkhart No. DB-200 SOS offers identical features of the B-800 SOS, but is designed as a direct connection nozzle for 2½" hose.

No. DB-200 SOS

Normally supplied with ladder hook and rigid 2½" base, available with swivel base. Can be ordered without ladder hook.

Base thread 2½". Bottom of tip and top of playpipe Underwriters' or any 1½" thread. Polished Brass or Chromium plated finish.

For fog tip only, specify No. B-200 SOS

Your Elkhart representative will gladly tell you more about the advantages of the Dial-A-Tip nozzle. Please write our Sales Department for prompt action.

ELKHART BRASS MFG. CO. INC., ELKHART, INDIANA

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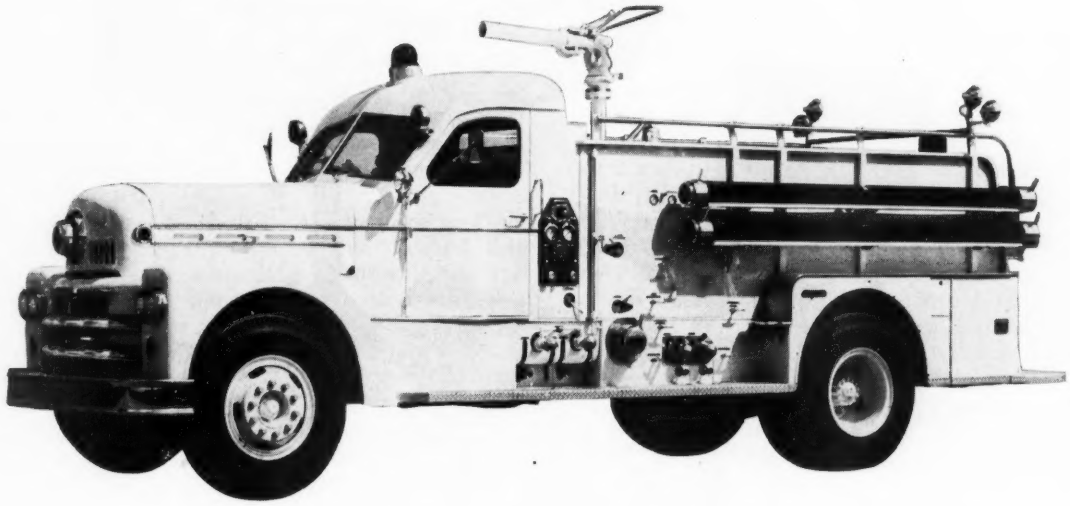

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FIRE
ENGINEERING
VOL. 114, NO. 2 FEBRUARY, 1961
THE JOURNAL OF THE FIRE PROTECTION PROFESSION SINCE 1877

Fire Protection Is Also a National Defense Effort

Now that the controversy over the recent New York Naval Shipyard catastrophe involving the aircraft carrier *Constellation* has quieted, perhaps it is time to consider fire protection practices in Navy shipbuilding. The basic objective of this discussion is to review some factors contributing to the fatal fire spread aboard the vessel itself and not to engage in name-calling or dispute motives. The latter factors have been an unfortunate aftermath, tending to cloud the real issues and force reasoning off on a tangent where the objective may be confused.

The simple fact which strikes anyone inspecting this ship is that, in a great part, it was built to burn! This may sound strange when it is considered that the major construction components are steel. Yet this metal is put together in such a manner that it invites destructive fire in several ways.

The immense size of the structure is difficult to visualize except by actual inspection. However, it is relevant to state that the flight deck is over 1,000 feet in length. Located between this and the immense hangar is the gallery deck where much of the fire damage occurred and some lives were lost. On each side of this deck, port and starboard, a passageway runs practically the entire length. Yet not a single bulkhead door was provided at any frame which could have cut off much of the smoke, heat and flammable vapors which quickly raced through a major portion of this area.

Extension of the fire might not have been completely stopped in this manner, for the tremendous radiated heat most likely would have involved common oil and rubber-base paints which had been applied to the steel bulkheads. Even with these factors considered, doors located at strategic positions most likely would have slowed the involvement on this deck to a point where control of the fire could have been established in comparatively quick order.

Complementing these hazards was another: A built-in void similar to a false ceiling directly underneath the gallery deck. This occurred due to installation of insulating material on the overhead of the hangar deck for necessary soundproofing purposes. The controversial wooden scaffolding planks on metal pipe supports used in applying the insulation contributed their share to the holocaust at the outset since this material tended to form another false ceiling of a kind and one that burned readily once ignited. The latter hazard was a necessary construction risk but certainly the voids created by the insulation could have been fire-stopped at points along the overhead.

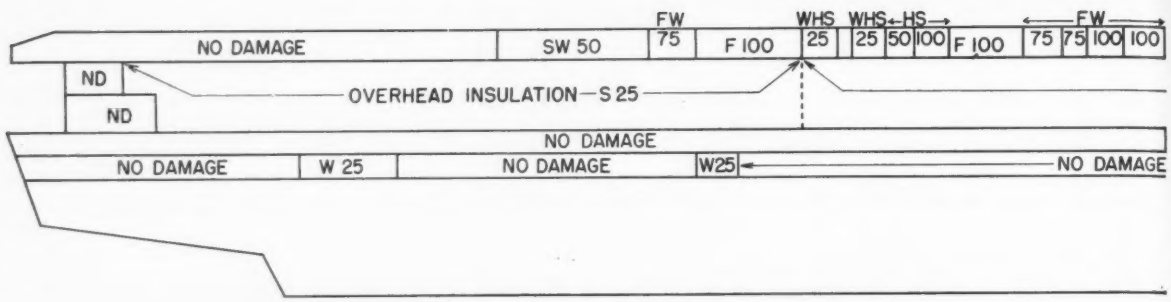
Responsible for the fire was the use of a tank containing JP-5 fuel on the hangar deck. This indicates failure to recognize potential dangers in fuel handling by permitting piping and valves to be exposed to normal construction traffic which in any building project is hazardous at best. Perhaps some persons were lulled into false security by thinking the higher flash point of the jet fuel made it safer to handle in this manner than other fuel types. The results of the spill certainly should dispel all ideas of this nature in the future.

The foregoing points indicate that somewhere along the line, from the time of inception to the actual construction, a lack of design discipline in common fire protection practices permitted a monster to develop. Now that a number of skilled construction workers have paid with their lives, perhaps their deaths will not have been in vain if the inherent weaknesses can be corrected.

Some $47 million have been lost as a result of the blaze, but this money can be replaced by the taxpayers. These same persons who must foot the bill can be expected to advance even greater amounts to build the necessary safety into the finished product. If this is not done, the citizens of this country have the right to wonder if it is proper to complete the ship at all. For in this age of nuclear weapons, is it right to permit any vessel so susceptible to fire to sail with a human crew?

The *Constellation* is to be a proud warship symbolizing the strength of this country and therefore a deterrent to war, if such is possible. War is however a matter of basic economics. Any potential enemy will be aware of the weaknesses presented and underlined by this fire. That same enemy certainly wouldn't waste the millions of dollars necessary to construct and deliver a nuclear weapon to destroy the ship if a few dollars spent on ordinary flame-producing weapons will accomplish the objective.

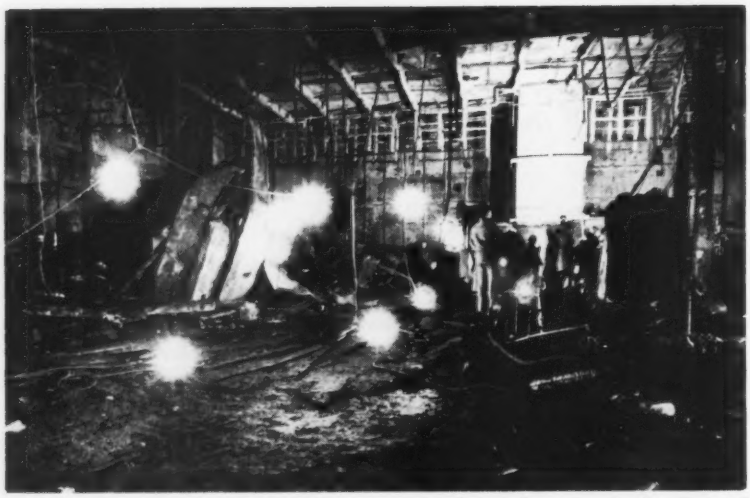
Wm O'Brien



Legend: F—Fire, S—Smoke, W—Water, SW—Smoke and Water, HS—Heat and Smoke, ND—No Damage.
Numerals next to letters indicate percentage of estimated damage

Tragic Fire Ravages Aircraft Carrier Constellation

National Defense program set back by damage to giant warship nearing completion

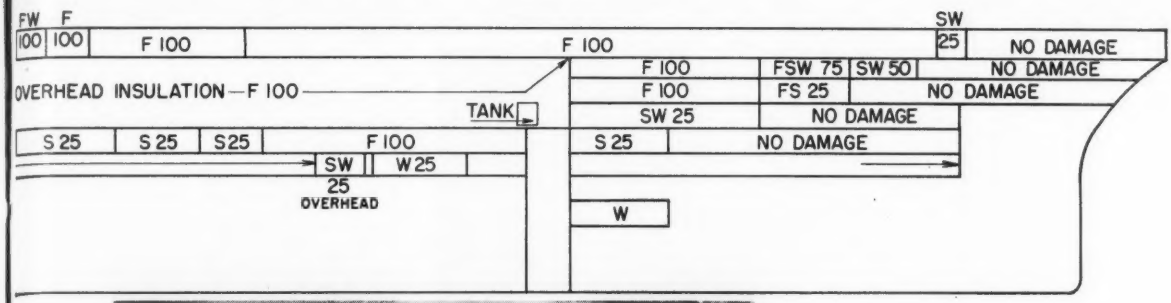


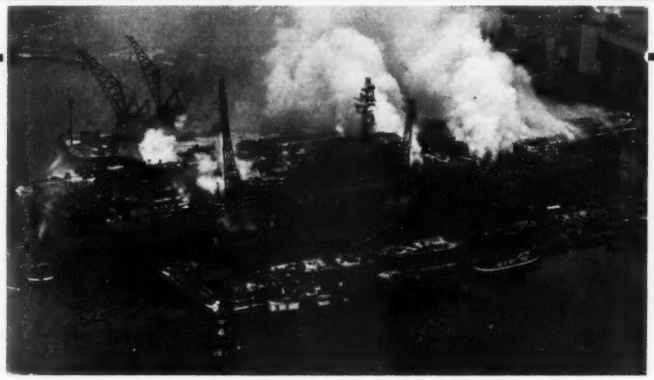
Workmen begin clearing debris from the hangar deck two days after the fire. Twisted I-beams on overhead had massive 12-inch web—*UPI photo*

Perforated aluminum facing over insulation hangs from overhead aft of major destruction. In front is wooden staging that stretched above hangar deck—*Wide World photo*

FLAMES RAGED through the nearly completed aircraft carrier *Constellation* in the New York Naval Shipyard, Brooklyn, N. Y., on December 19, killing 50 civilian workmen, injuring more than five times that number, causing $48-million damage, and setting back completion of the vessel about seven months. In the number of lives lost, this was the worst fire in the Port of New York in more than 56 years—since the excursion steamer *General Slocum* burned with a loss of 1,021 lives on June 15, 1904.

In its effect on national defense, the *Constellation* fire is comparable to the loss of the *Normandie*, which had been renamed the *Lafayette* and was being refitted as a troop transport at her Hudson River berth when fire ravaged her on February 9, 1942. The *Constellation* was destined to join the Pacific fleet by mid-1961 as part of the Navy's commitment to maintain





Aerial view of the fire with fireboats and commercial tugs in the foreground. Cranes which lifted platforms filled with workmen are prominent
—Wide World photo

three attack carriers operating at all times in the western Pacific and in the Mediterranean. It is now expected that the vessel will not be completed until December.

Description of the vessel

The *Constellation* is one of the largest ships in the world. Fully loaded, it displaces over 60,000 tons, has an over-all length greater than 1,000 feet, and a beam, at the extreme width of the flight deck, of about 250 feet. There are nine levels above the hangar deck and seven levels below it, containing more than 1,200 compartments. While built of steel, there was considerable wood scaffold planks on steel framing, and other combustible materials in the ship.

Many horizontal openings in bulkheads were not equipped with doors. One set of ballistic doors in the hangar deck, which extend from deck to overhead, form an effective fire stop. However, there is only one set of these doors in the *Constellation* as compared to three sets on many earlier carriers. On the *Constellation* these doors were in an area not affected by the fire and were not a factor in containing it.

Glass fiber insulation was being installed over the hanger deck about a foot below the overhead. This insulation either burned or decomposed from the heat, together with an aluminum perforated facing, possibly due to the resin binder employed. The space between the insulation and the overhead was similar to that created by a hanging ceiling. The wood scaffold planks previously mentioned in effect formed another hanging ceiling.

The interior of an aircraft carrier has been described as a rabbit's warren of compartments, passageways and ladders. With good lighting available, it is difficult for the uninitiated to find one's way about such a vessel during construction stages. In the total darkness that ensued shortly after the outbreak of the fire, the difficulty of escape and the resultant life hazard to the approximately 4,000 civilian workmen aboard was greatly aggravated. In addition, fire blocked five of the most heavily used passageways from the forward part.

Fire protection

Little of the extensive fire protection equipment that would be present in an aircraft carrier in service had been installed. Since the *Constellation* has not yet been commissioned, no Navy personnel were assigned as damage control crews. However, there was a shipboard fire brigade consisting of civilian workmen employed on the carrier. The yard is also protected by its own fire department under command of Fire Chief Isaac Holiber. Normally 14 or 15 fire fighters are on duty to man two pumpers and one ladder truck.

The yard has its own hydrant system with both salt and fresh water hydrants, some above ground, some flush. The yard hydrants, hose and fittings are equipped with National Standard threads, while the New York Fire Department uses New York Standard. Some adapters are available at the yard.

There were no sprinklers aboard the carrier at the time of the fire, but Captain Robert C. Gooding, the yard's repair and shipbuilding superintendent, later testified in retrospect temporary sprinklers should have been installed a few months before the fire.

There was no "Abandon Ship" signal in the system of fire alarms aboard the carrier. Three blasts on a ship's horn signified fire aboard; four blasts meant fire on the dock. The only notification to abandon ship was by passing the word. Since the fire. a five-blast signal for abandoning ship has been recommended and is now in the process of adoption at the yard.

No fire drills

There were no fire drills as such. At a news conference after the fire, Rear Admiral Schuyler N. Pyne, the yard commandant, said that the holding of fire drills or mapping evacuation plans on a project such as the *Constellation* were not practical because the size and makeup and location of the working crews changed almost every day as construction went along. He contended, however, that workers on the ship had been instructed in escape in case of fire, and that escape was possible from most of the ship's areas. Several Navy officers later testified that familiarity with evacuation routes gained one day might be useless the next day. Captain James A. Brown, production officer at the yard, said

TRAGIC FIRE RAVAGES CONSTELLATION . . .

An unidentified shipyard worker flashes his light under tank where JP-5 was stored. A dumpster truck nudged metal plate which knocked out plug of tank permitting the fuel to flow down bomb elevator well—*Wide World photo*

that the people who build these ships and live on them know them. He said 3,300 men had made their way off the carrier in the brief time it took him to respond to the alarm.

Chief Holiber testified after the fire that the housekeeping aboard the *Constellation* was better than aboard other ships during construction there. His men had responded to 26 fires and five false alarms aboard the ship during the long construction period (since 1957). He described the number of alarms as below normal.

How the fire started

The blaze started, evidently shortly before 10:20 a.m., when a dumpster truck pushing a heavy trash bin on the hanger deck accidently struck a steel plate, bending it upward until it knocked out the main plug of a 500-gallon tank. This contained approximately 400 gallons of JP-5 fuel used to operate emergency generators and other equipment. The tank was not protected by any dike or cofferdam. Immediately an order to stop all burning operations in the area was sounded over microphones being installed forward on the hangar deck for a talk Admiral Pyne was to give the workers at 11:30 a.m.

Lieutenant Vito R. Milano, assigned to check construction of the *Constellation's* hull, tried to stop the flow of oil and ordered a precautionary call put in for the shipyard fire department. The lieutenant later testified before a Naval Court of Inquiry that the tank's plug may have been improperly installed and capable of being easily dislodged.

The escaping oil flowed down a bomb elevator well in which a welder was at work. William W. Brown, Jr., a boss rigger 22 years with the shipyard, testified that when the oil gushing from the tank flared, two hose lines went into operation from the other side of the deck, but when he and Lieutenant Milano looked for lines nearby they found them not connected. The lieutenant said he and those with him then "set off CO_2 bottles, as many as we could get our hands on and threw them in, hoping they would do some good." From the testimony of witnesses at the Court of Inquiry, it appears that the oil flowed down the bomb elevator well, where either the welder's torch or hot metal ignited the oil which flashed back to the tank and continued to burn as it gushed forth. The fire spread rapidly, feeding on the wooden planking, other combustible work equipment and insulating material.

FDNY operations

The first notification came to the New York Fire Department when a special building box at Building 213, Kent Avenue and the Clymer Street Gate, opposite Vanderbilt Avenue, a FDNY Manual alarm box, 3-308-4, was pulled at 10:30 a.m. Five alarms were sounded within the next 37 minutes. Then at 1:26 p.m., all the engine companies that would respond on the second alarm to Box 277, Clinton and Delancey Streets, Manhattan, across the Williamsburg Bridge from the Navy Yard, were called to the yard. Forty minutes later, all the engine companies that would respond up to a fifth alarm at Box 277, Manhattan, were called to the Navy Yard.

As a result of these alarms and the various special calls transmitted (all of which are shown in the box), 35 engine companies, five ladder companies, four marine units (fireboats), six squad companies, four rescue companies, three searchlight units and two department ambulances responded to the fire.

The problem facing the fire fighters was a hot fire in a structure equivalent to a building five city blocks long, more than a block wide and 14 stories high, containing more than 1,200 rooms. The fire had to be fought, not only in total darkness, but hampered by dense, acrid smoke. On the pier and on the exposed decks, the third snowfall in less than a week made footing precarious. Fire Commissioner Edward F. Cavanagh, Jr., later testified that this was a tough fire to fight because of the problem of getting close enough to the flames with water. He said it was like pouring a 35-foot stream of water into a roaring furnace that reached back a hundred feet.

The commissioner, other officials and chaplains, Chief of Department George David, five assistant chiefs, six deputy assistant chiefs, three deputy chiefs, three battalion chiefs, eight medical officers, 61 company officers and 493 firemen responded.

The 35 land engine companies and four fireboat units stretched ten 3½-inch lines, thirteen 3-inch lines and forty-two 2½-inch lines. These supplied seven open nozzles, 44 controlling nozzles, 12 distributors and two cellar pipes. Twelve lines were operated on the flight deck, 25 on the hangar deck, nine on the gallery deck and 19 below decks. The lines were frequently moved from one position to another as required. All members of engine and marine units were used at various times for search and removal operations.

Rescues

The ladder companies, rescue units and squad companies raised aerial ladders to the flight deck to rescue workers and to permit advance of fire fighters. Equipped with masks, the members of these units searched for, and rescued workers from compartments on all decks. They administered first aid to the injured and used oxy-

acetylene torches to reach trapped workmen.

Heroic acts were commonplace that afternoon. Chief David's aide, Deputy Assistant Chief Charles J. Stressler and Deputy Assistant Chief Thomas J. Hartnett, were among the officers who, without the protection of masks, led fire fighters below decks and rescued many trapped workmen. Navy Lieutenant George E. Fink told of accompanying chief Hartnett down into a smoke-filled compartment from which Fink was driven back by the fumes. But the chief, though lacking a mask, stayed on and supervised the rescue of unconscious men. Commissioner Cavanagh said the fire fighters had rescued about 250 workmen with aerial ladders.

Many workmen owed their lives to the quick-thinking operators of yard cranes, who swung a large platform onto the carrier deck; workers clambered aboard and were lifted to safety. As masked fire fighters brought up unconscious men who had been trapped below decks, large wooden boxes were substituted for the platform. The injured were placed in the boxes and swung down to waiting medical teams and ambulances.

The three searchlight units placed stationary and portable floodlights in operation in exterior and interior positions as directed by officers in charge of operations.

Eight medical officers, using two department ambulances as bases, administered first aid to injured civilians and fire fighters. The department ambulances transported injured fire fighters to hospitals.

Probationary firemen respond

When the fire broke out, a fireboat, Marine Unit 8, was at the Welfare Island training site to instruct probationary firemen in marine fire fighting. Assistant Chief James T. Ward directed that the boat transport 100 of the probies and 14 instructors to the fire where they operated from 11 a.m. to 11 p.m. Fifty others went in personnel-carrier trucks. They stretched and manned hose lines, operated cellar pipes and distributors, ventilated, searched for trapped workmen and removed the dead and injured. They rendered first aid; transported hose, fittings, tools, masks and cylinders and performed messenger duty.

Members of the mask service unit operated at the fire from noon until 10 p.m., December 19. They delivered 25 demand masks and 115 extra cylinders, 30 gas masks and 50 extra canisters, two inhalators and one resuscitator and 13 extra cylinders. The unit refilled 50 air cylinders.

The Bureau of Fire Communications, in addition to handling the vast amount of telegraph and radio traffic and moving up companies to cover for those at the fire (relocations), sent out calls to various agencies as follows: Police department for ambulances and disaster units, and to clear the Williamsburg Bridge for fire apparatus responding from Manhattan; Department of Marine and Aviation and Port of New York Authority for foam and oxygen; Brooklyn Battery Tunnel to clear the tunnel for the response of fire apparatus; Consolidated Edison and Brooklyn Union Gas Company for oxygen, masks and resuscitators; U. S. Coast Guard and U. S. Navy (Floyd Bennett Field) for oxygen, masks and resuscitators; Mt. Vernon Fire Department for masks and oxygen; Nassau County Chief Fire Marshal Peter Lynch for five rescue companies with oxygen, inhalators and resuscitators; Sanitation Department for sand and salt.

Mutual Aid

Valley Stream, Oceanside, East Meadow, Lynbrook and Elmont sent 43 men with resuscitators and masks. Marshal Lynch selected these units to respond mainly because they were the nearest Nassau County units with the equipment needed. Fire Chief Andrew J. Gerlock of Yonkers sent an assistant chief and two fire fighters with two inhalators and a resuscitator.

The Coast Guard sent fire fighting tugs, and picket boats which picked men from the water and ferried them to first-aid stations ashore. Several city hospitals sent disaster units and ambulances; the American Red Cross dispatched 150 pints of blood and 150 pints of serum albumin for shock treatment, and the Moran Towing Company sent five tugs to help remove the trapped men. (Editor's note; Numerous organizations and individuals performed heroic acts but, in reporting a disaster of this magnitude, it is impossible to record all that happened. Omissions are not intentional.)

As the water from hoselines poured down into the hull, the mighty ship began listing to starboard toward the dock to which she was moored. Rear Admiral Schuyler N. Pyne, the yard commandant, and Chief of Department George David conferred about 2 p.m. A list of 5 degrees would make the ship's decks too dangerous for firemen. When the list reached about 4 degrees, the Navy ordered the seacocks on the portside opened. Enough river water rushed into the ballast tanks to settle the ship on an even keel. Forty minutes later the list was reduced to 2 degrees.

Bureau of Fire Communications

10:30 A.M.	3-308-4	New York Naval Shipyard, Kent Avenue and Clymer Street Gate, Box at Building 213 opposite Vanderbilt Avenue (F.D.N.Y. Manual Fire Alarm Box) (Initial Alarm)
10:30 A.M.	7-308-102	Ladder Company
10:37 A.M.	22-308	Second Alarm
10:37 A.M.	7-308-108	Ladder Company
10:50 A.M.	33-308	Third Alarm
10:50 A.M.	7-308-106	Ladder Company
10:55 A.M.	44-308	Fourth Alarm
10:55 A.M.	5-308-215	Engine Company
10:55 A.M.	7-308-18	Ladder Company
11:07 A.M.	55-308	Fifth Alarm
11:09 A.M.	666-308-1	Department Ambulance
11:14 A.M.	7-308-11	Ladder Company
11:16 A.M.	9-308-22	Searchlight Unit
11:28 A.M.	10-308-1	Rescue Company *(Manhattan)*
11:28 A.M.	10-308-4	Rescue Company *(Queens)**
11:30 A.M.	10-308-3	Rescue Company *(Bronx)*
11:35 A.M.	8-308-3	Squad Company
11:35 A.M.	8-308-4	Squad Company
11:35 A.M.	8-308-5	Squad Company
11:35 A.M.	8-308-8	Squad Company
11:44 A.M.	8-308-1	Squad Company
11:53 A.M.	8-308-6	Squad Company
12:13 P.M.	9-308-21	Searchlight Unit
12:13 P.M.	9-308-24	Searchlight Unit
12:13 P.M.	10-308-5	Rescue Company *(Staten Island)*
1:00 P.M.	9-308-12	Gasoline Oil Unit
1:26 P.M.	77-306-66 -22-277	Simultaneous Call
1:26 P.M.	77-5-308 -31	Engine Company
1:26 P.M.	77-5-308 -5	Engine Company
* 1:47 P.M.	6-308-1	Marine Company
* 2:06 P.M.	77-308-66 -55-277	Simultaneous Call
10:31 P.M.	6-308-1	Marine Company

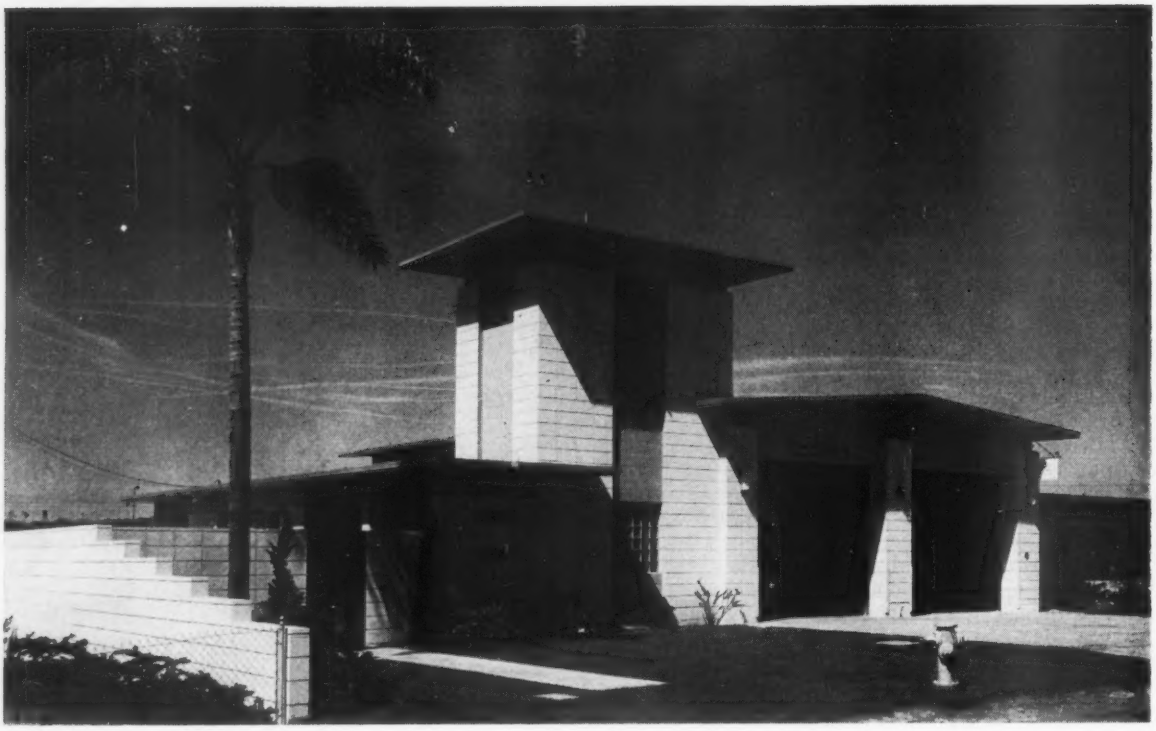
Chief David declared fire under control at 10:44 P.M.

** The Brooklyn rescue unit, Rescue Company 2, was still operating at the scene of the December 16 plane crash, and was called to the Navy Yard by radio.*

Simultaneous fire

More than an hour before Chief David declared the aircraft carrier fire under control, the Brooklyn office of the Bureau of Fire Communications received an alarm at 9:11 p.m. for a factory fire at Morgan Avenue and Frost Street, about a mile from the Navy

Continued on page 146



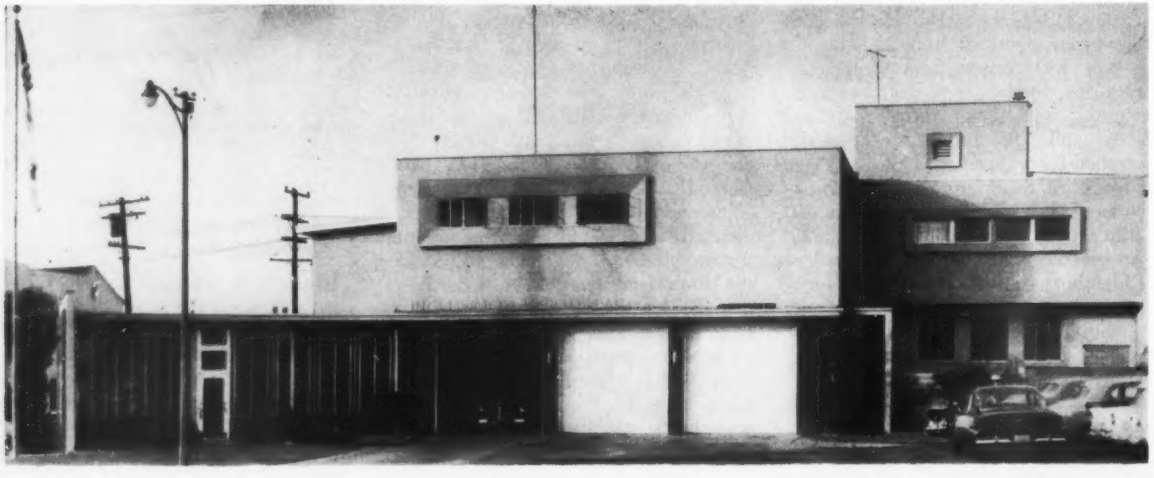
Fire Station 28, on Kearny Mesa in San Diego, designed by Wulff & Fifield, AIA, shows how masonry blocks are woven into a clean, crisp, modern design. The station is one of the most attractive buildings in the suburban community—photo by Ed Sievers

Let's Build Better Fire Stations

Design considerations which can provide greater utility and higher morale

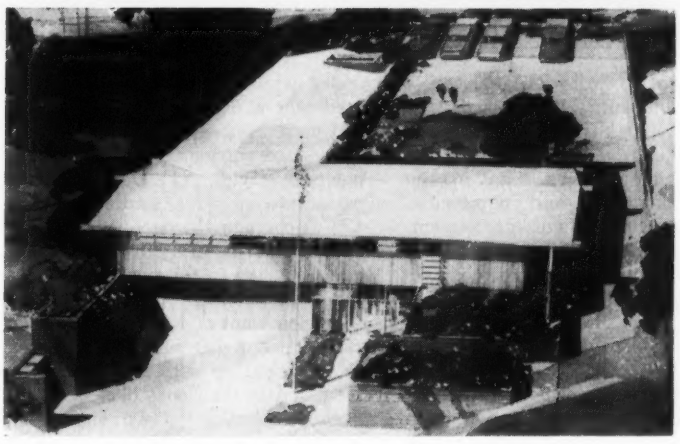
By WILLIAM ALLEN, AIA

Central fire station, City of Inglewood, Calif. After putting this station into service, the author used it as a laboratory for the evaluation of the materials, finishes and equipment from the standpoint of the number of man hours necessary for routine cleaning, refinishing, repair and replacement



BOTTOM: Designed to harmonize with hillside estates in Los Angeles' Mulholland Drive area, Fire Station No. 99 will be built in early 1961. Architect Edward H. Fickett, AIA, has incorporated large planters, expansive brick and aluminum areas and carefully planned color schemes to present a residential look in the 8,600-square-foot facility

DIRECTLY BELOW: Architects Hamilton and Graham, AIA, of Muncie, Ind., designed that city's new No. 5 fire station for drive-through facility by employing "overhead doors" in duplicate on front and rear of apparatus rooms
—photo by Bill Engdahl, Hedrich-Blessing



About the Author

The author has designed numerous city halls, police and fire stations and supporting civic structures for a legion of California cities. Many of his designs are rated as containing the most efficient working provisions of any buildings of these types. His main adjunct is painstaking personal research, not of preceding designs, but among the people who must use the structure.

ADEQUATE PROVISION of effective fire stations, their strategic placement and equipping constitute one bulwark against disastrous fires. The neglect of these matters can be one of our greatest civic failures. Unfortunately not all fire stations of the present are in keeping with the times or truly planned for the future.

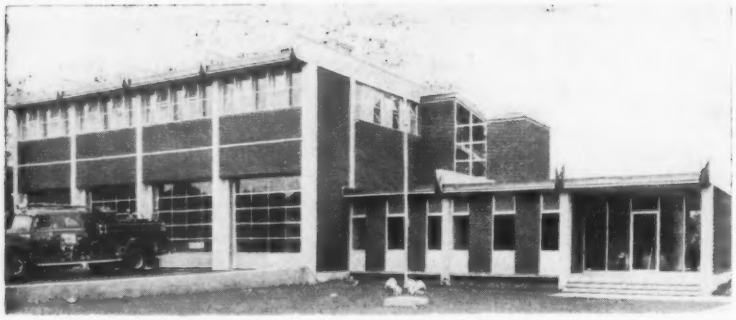
There are several inherent pitfalls in the design of modern fire stations. These add up to station inefficiency, frequent waste of funds and a dissipation of crew time on secondary functions. As by-products, we also inherit lowered morale in firemen which could profitably be done away with. It is obvious that too many fire stations are not a true combination of the efforts of firemen and architects to give a department and a community thoroughly effective buildings.

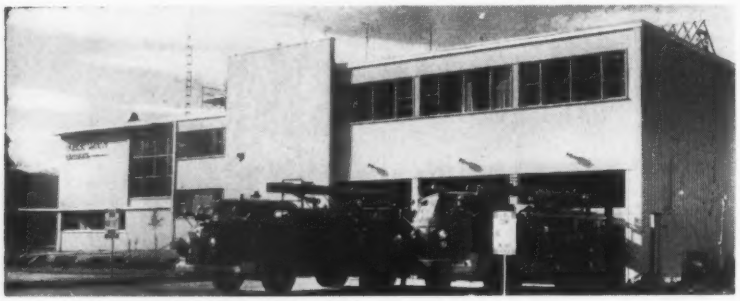
For example, the chief of a metropolitan department recently observed: "The crew of one of our major substations is spending so much time on routine upkeep and cleaning that it is making dangerous inroads upon drills, inspections, and liaison with schools and other groups. In fact, the men sometimes think they are a bunch of housewives instead of firemen. Yet the station is only four years old."

When a city appropriates $100,000 for an efficient firehouse and doesn't get it—what is wrong? What should have been done to assure satisfaction? The purpose of the answer is not to point a finger or find fault, but to find solutions, so let's begin with the architect. He should hold interviews with a representative cross section of firemen before he puts a line on paper. These should be individual, private talks starting with the chief, and going on down to the newest crew member. To encourage the men to talk on a constructive basis, the architect should have a chart with headings covering each facet of design, layout, materials and equipment. Under these, there should be spaces for each man's comment.

Don't cut corners

After studying these data, along with the city's specifications, the architect should analyze the material in terms of the budget and if there is an indication that the desired station can't be had for that amount, the time to say so is at the beginning. It is difficult to back down from luxury to "as good as." When it is necessary for





Fire department headquarters, Kitchener, Ontario (above), and Kitimat, British Columbia Public Safety Building (below), incorporating fire headquarters, are typical of present Canadian trend in main station structures

LET'S BUILD BETTER FIRE STATIONS continued

an architect to "trim fat," it is fallacious for him to try to give a department a facility that looks like its desired building by cutting corners and substituting less expensive, and usually inferior, materials and equipment. This can only result in disappointment, rancor and irritated firemen. This process can do an architect irreparable harm because when the substitutes wear out, chip, fade, peel and break, these evil birds roost on his office shingle.

Let's look at one of the most serious fallacies in this type of undertaking: A decision by city officials to save money by eliminating construction supervision by the architect. This is a most expensive form of false economy.

Not long ago, one architect had so much trouble with subcontractors on fire stations that extraordinary means had to be taken to prevent their ruining the work and his reputation. He found, for example, that painting contractors were using inferior products that didn't remotely resemble the specifications. As a result, after a few rains, the new structures looked 20 years old and the adjacent gutters took on a pastel version of the building's colors.

To correct this, the architect required every painting contractor to bring his materials to the job and mix them under supervision. He went further and established a check system under which not a thing could be used, nor a device installed, until it had passed inspection.

We can summarize the preceding points by saying: (1) Don't expect a caviar station on a sardine budget; (2) encourage the architect to give you the bad news at the outset; (3) don't put him in the position of making a preliminary budget of exactly what you want and then force him to retreat down that substitution ladder so you wind up with a bargain-basement station that looks like—but isn't—the real thing; (4) since you wouldn't expect an architect to direct fire fighting operations, don't try to quarterback his work by eliminating his inspection services.

When planning district protection, consider whether to build the station as a single-story structure capable of taking a future second floor, or whether to have enough property to permit horizontal expansion, if needed. In settling details of crew and rig capacity, remember that today's urban, suburban and industrial migrations are causing extreme problems in providing fire protection.

Whether a station is a major headquarters or a substation, businessmen will probably argue that such a structure near them will hurt business. In addition, a high percentage of home owners will claim that a station in their midst will ruin property values. Both contentions can be quickly disproved by a well-qualified appraiser. This system beats all the arguments you can muster—and arguments don't make friends for a department.

An obvious key to allaying residential-section objections is to make your building blend with the local architecture in the fullest sense of the word. The writer has read articles making many claims for "blending," yet this was frequently only a token gesture. A good way to prevent the difficulty is to have a committee of home owners sit in with the architect on preliminary designs and approve the final drawings in writing. Incidentally, a hose tower in a residential district usually creates fireworks among the residents, so you might as well leave it out from the outset and substitute an electric dryer or concealed rack.

Once the architectural styling, size and mission of a station are settled, you are ready to determine the physical features. Keep in mind that your station has a split personality. It is first a fire fighting tool and then it is a "home away from home" for a group of men who, like others, can't help measuring their job to some extent in terms of how much it "picks on them." They are entitled to be comfortable.

First of all, let us deal with the primary mission of your building. It is only reasonable to require that a station should be as fireproof as is possible. There isn't much embarrassment that exceeds explaining why a fire station burned.

Provide quick exit

The station should be faced in the direction of the most runs, or in other words, toward the greatest hazards. The setback, if one can be made, should be sufficient to permit a fast, safe exit and an unobstructed turn right or left in getting under way. The site should be such size and shape that rigs can be driven onto the property and into the station via the rear to eliminate having to back in from the street. Ramps should not be steep because they may be slippery in bad weather.

Power-operated doors must incorporate a means of swift and easy manual operation, if need be. It isn't advisable to rely upon a single door which might become jammed and immobilize your equipment. Have doors so arranged that if one rig fails, others can be moved. Front and rear doors may cause heating problems in regions of rigorous climate, but their advantages outweigh their drawbacks. The temperature problem can be solved

Continued on page 143

Make better use of men and equipment

A review of some common factors which can assist in overcoming manpower shortage problems

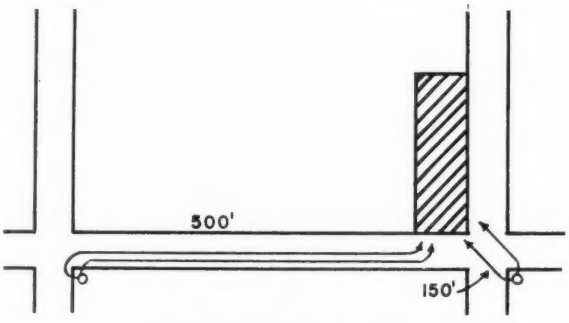


Fig. 1. Hydrant lines—1300 feet of hose, 770 gpm

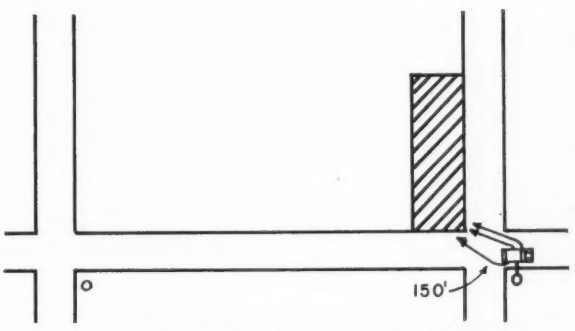


Fig. 2. Pumper supplied lines—450 feet of hose, 800 gpm

By STUART D. KLINGER

FIRE CHIEFS will agree that a department can ill afford to waste any manpower, time, or apparatus at a major fire. Yet it is often obvious that there has been a serious waste of these fire fighting facilities. The lamentable feature of such inefficiency is that frequently it is not the result of unwise decisions made during the stress and excitement of a large fire, but is due primarily to a lack of appreciation, before the fire occurs, of the advantages offered by certain arrangements of apparatus, as well as fire fighting methods. Once these advantages are recognized, they can be put into practice long before the fire occurs, and be in readiness for the first emergency. Such preparation will not only improve efficiency, but will also reduce the number of important decisions to be made on the fireground.

To illustrate the point, consider methods of loading hose. If, instead of filling a hose bed with one continuous long line of hose, divide the bed with partitions, so that a load can be split into two, or perhaps three, lines of shorter length. At a major fire, this arrangement will permit stretching two or three lines at once in the same time, and with no more effort, than was formerly required to lay one. It is obvious that time and manpower are saved, and confusion and disorder reduced.

Another point in favor of the split load is that, when changing hose at recommended intervals, the apparatus need never be completely out of service due to lack of hose, for there should always be at least half a load aboard.

It seems clear that there is nothing to be gained by assigning men to lay out and direct a hose line, if the water it provides does not hit the fire or protect exposures. Frequently, however, hose lines are used that are completely ineffective. So the next point is: Be sure you have located the fire, and that the water you are employing is hitting that fire.

Use of master streams

As a corollary to the principle of finding the fire, and hitting it with water, it might be added that even though you are hitting the fire, it cannot be extinguished unless the cooling effect of the water exceeds the rate at which the fire is producing heat. If your stream is not making a black hole in the flames, you might just as well shut it down. This brings us to the use of heavy or "master" streams, as produced by monitor nozzles of various types.

Many times in the past it has been found that one good stream from a deluge gun provided with a 1½, 1¾ or 2-inch tip will quickly knock down a fire against which several hand lines are ineffective. When you consider that the fire extinguishing punch of the deluge gun is accompanied by a large reduction in the number of men required, the virtues of these devices demand serious consideration.

Four hand lines with 1⅛-inch tips will produce a little over 1,000 gallons a minute at proper nozzle pressure; at least eight men will be required to man these lines. If the hand lines are replaced by a single deluge gun having a 2-inch tip, you can provide the same amount of water in one concentrated, and probably more effective, stream which can be easily directed by one man, thus releasing seven men for duty elsewhere. Quite often the use of a deluge nozzle will also reduce the number of hose lines which must be laid, thus effecting a further saving of manpower, hose, and time.

Probably the biggest opportunity to conserve manpower, and also to do a much better job, is provided by the use of pumpers, rather than hydrant lines. Many firemen are prone to think of pumpers only in terms of providing pressure and do not fully appreciate the amount of time, manpower, and hose that can be saved by pumping. Nor do they appreciate that pumping provides complete and instantaneous finger-tip control over each hose line. Some will even claim that hooking up a pumper takes too long, and requires too many men, so let's make a point by means of another illustration.

Suppose you respond to an alarm of fire for a corner building in the business district of your city. One hydrant is provided at each street intersection

Continued on page 147

RECENTLY the San Francisco Fire Department, Chief William F. Murray, was involved in two out-of-the-ordinary operations requiring the use of ladders.

One incident on October 26 involved overhaul of a four-alarm fire at the Merchants Ice Co. High in the walls of the cold storage plant a considerable amount of sawdust and cork insulation was ignited by a workman's torch. Due to the building construction, nature of the debris and other complicating factors, removal presented a problem. Undaunted Truck Company 13 raised its ladder to the location which Salvage Co. 3 covered with tarpaulins to make a gigantic chute. With the assistance of Truck Co. 2, the hard-to-handle debris was quickly removed from the fire scene and easily collected on the street for disposal.

Truck 13 in position for using ladder as improvised chute. Note use of tarps for protection against falling debris

Unusual ladder operations in San Francisco

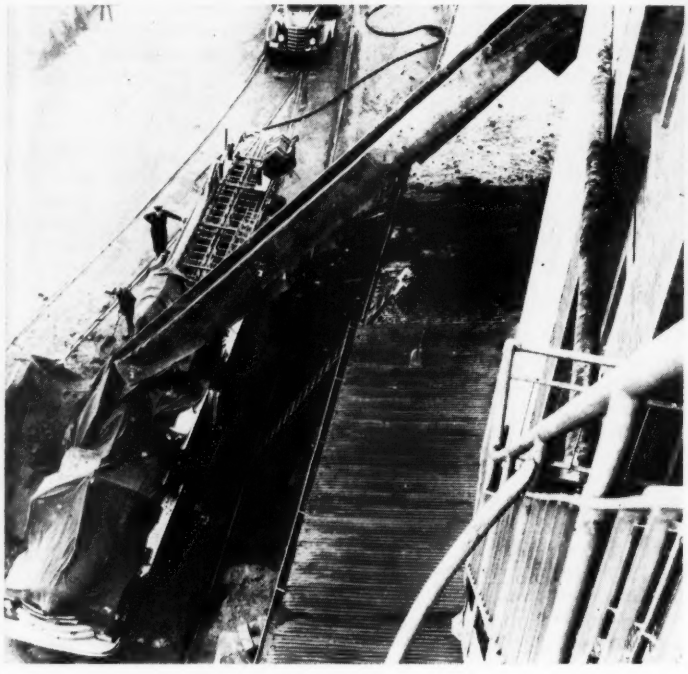
Another, on September 24, required the removal of a nine-year-old boy and two would-be rescuers trapped 60 feet up on the side of a cliff.

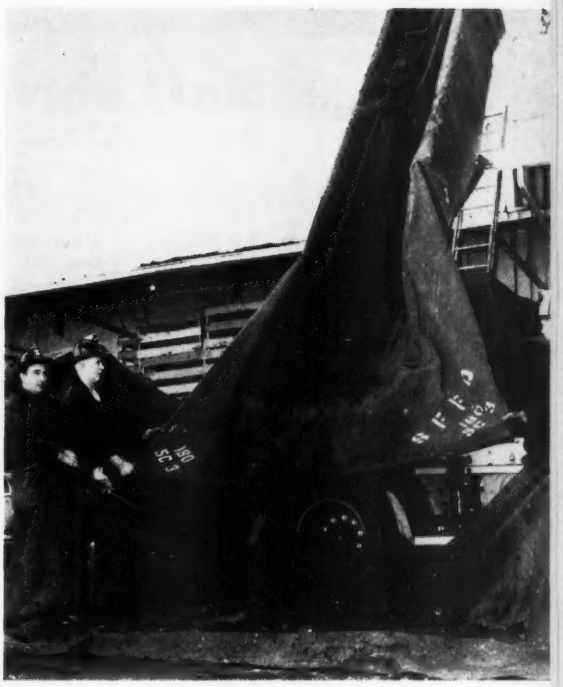
Chief Gerald Murphy, Battalion 9 and Truck Company 15 responded to the incident and upon arrival found the boy on the verge of falling from his perch. By raising a 65-foot ladder and placing it at a 45-degree angle to the cliff, the three persons were quickly removed to safety.

Long extension ladder in place on cliff face as firemen ascend to reach boy lying against rock. Would-be rescuer perches at right

Fireman Frank Connell, who assisted boy down, and victim reach safety of ground

Members of Truck 2 shovel debris onto chute as removal begins



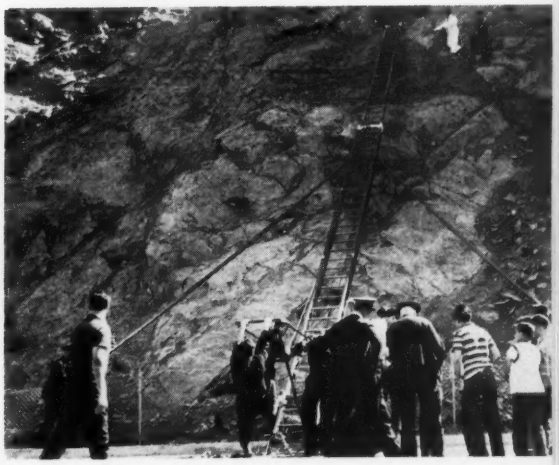


Members of Salvage 3 prepare to remove pile of debris. Operation was simple and highly effective

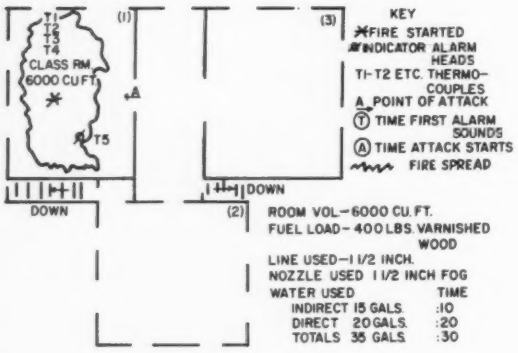
Overhead view of operation in progress showing tarpaulin used to catch material chuted to ground

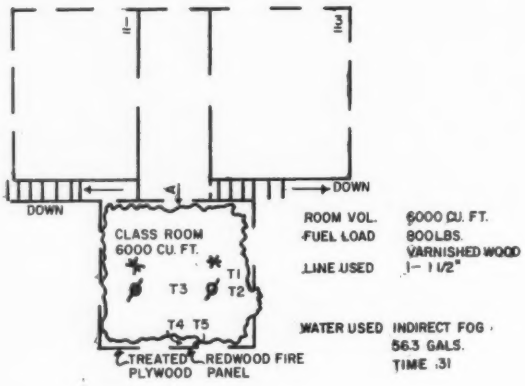
Official San Francisco
Fire Department photos by Chet Born

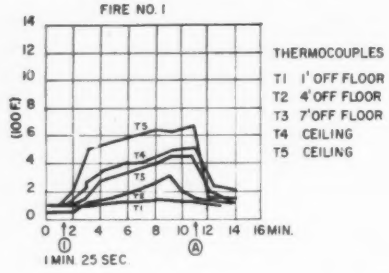
Fire fighter assists boy onto ladder tip as rescue progresses

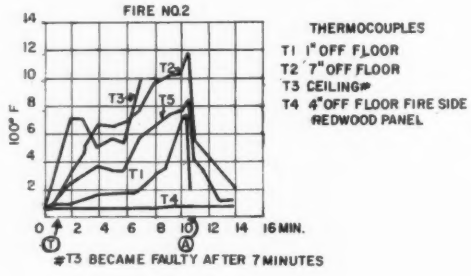


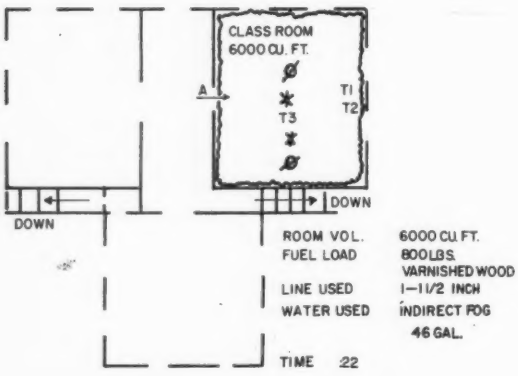
San Francisco truckmen move ladder to complete operation by rescuing men who had attempted to reach boy

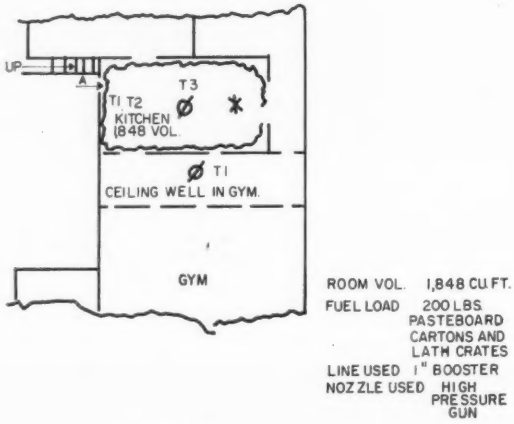

T1
T2
T3
T4
CLASS RM.
6000 CU FT
T5
A
(1)
(2)
(3)
DOWN
DOWN
KEY
FIRE STARTED
INDICATOR ALARM HEADS
T1-T2 ETC. THERMO-COUPLES
A POINT OF ATTACK
T TIME FIRST ALARM SOUNDS
A TIME ATTACK STARTS
FIRE SPREAD
ROOM VOL—6000 CU. FT.
FUEL LOAD—400 LBS. VARNISHED WOOD
LINE USED—1 1/2 INCH.
NOZZLE USED 1 1/2 INCH FOG
WATER USED TIME
INDIRECT 15 GALS. :10
DIRECT 20 GALS. :20
TOTALS 35 GALS. :30

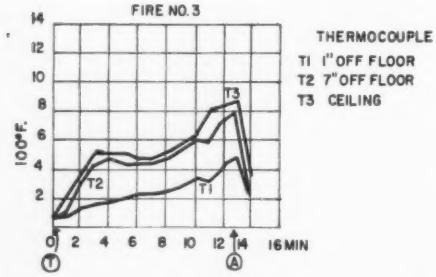

DOWN
DOWN
CLASS ROOM
6000 CU. FT.
T1
T2
T3
T4 T5
TREATED PLYWOOD
REDWOOD PANEL
ROOM VOL. 6000 CU. FT.
FUEL LOAD 800 LBS. VARNISHED WOOD
LINE USED 1— 1 1/2"
WATER USED INDIRECT FOG 563 GALS.
TIME :31

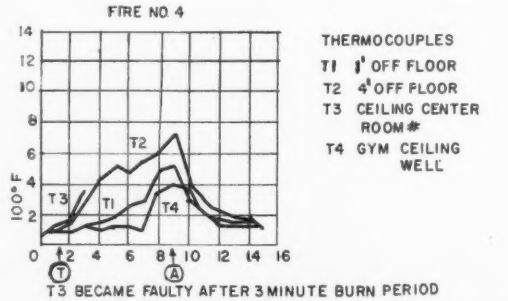

FIRE NO. 1
(100 F)
THERMOCOUPLES
T1 1' OFF FLOOR
T2 4' OFF FLOOR
T3 7' OFF FLOOR
T4 CEILING
T5 CEILING
0 2 4 6 8 10 12 14 16 MIN.
1 MIN. 25 SEC.


FIRE NO.2
100° F
THERMOCOUPLES
T1 1" OFF FLOOR
T2 7" OFF FLOOR
T3 CEILING#
T4 4" OFF FLOOR FIRE SIDE REDWOOD PANEL
0 2 4 6 8 10 12 14 16 MIN.
#T3 BECAME FAULTY AFTER 7 MINUTES


CLASS ROOM
6000 CU. FT.
A
T1
T2
T3
DOWN
DOWN
ROOM VOL. 6000 CU. FT.
FUEL LOAD 800 LBS. VARNISHED WOOD
LINE USED 1—1 1/2 INCH
WATER USED INDIRECT FOG 46 GAL.
TIME :22


UP
A
T3
T1 T2
KITCHEN
1848 VOL.
T1
CEILING WELL IN GYM.
GYM
ROOM VOL. 1,848 CU. FT.
FUEL LOAD 200 LBS. PASTEBOARD CARTONS AND LATH CRATES
LINE USED 1" BOOSTER
NOZZLE USED HIGH PRESSURE GUN


FIRE NO. 3
100°F.
THERMOCOUPLE
T1 1" OFF FLOOR
T2 7" OFF FLOOR
T3 CEILING
0 2 4 6 8 10 12 14 16 MIN


FIRE NO 4
100° F
THERMOCOUPLES
T1 1' OFF FLOOR
T2 4' OFF FLOOR
T3 CEILING CENTER ROOM#
T4 GYM CEILING WELL
0 2 4 6 8 10 12 14 16
T3 BECAME FAULTY AFTER 3 MINUTE BURN PERIOD

Gervais test fires provide training information for Oregon fire fighters

FIRE TESTS and experiments conducted on May 22 last at Gervais, Ore., by the Oregon State Fire Training staff have shown how cooperation among many agencies can contribute to the fire defenses of a community and to the success of a training program. The controlled burning at Gervais had two objectives: (1) Training fire fighters in rescue methods and combat tactics for school fires; (2) testing and experimenting with various industrial fire protection materials and equipment.

The scheduled tests involving all Marion County fire departments included evacuation and rescue, indirect fog attack, salvage, ventilation and other standard fire fighting practices. All were performed at a parochial school building donated by the Sacred Heart School District.

The building was an old two-story frame structure with gym attached. Paralleling it on the south, 9 feet from eave to eave, a new school building constituted a bad exposure. In terms of the size of the target building and the exposure problem, the city water supply was considered inadequate. To supplement this supply, the Southern Pacific Railroad spotted two 10,000-gallon tank cars on a convenient siding. These were supplied with water from a nearby well and were maintained as a continuous reservoir throughout the burn.

Construction typical of 20's

The school was typical of those built during the 1920's; frame construction, 1 x 6-inch fir drop siding, combination hip and gable cedar shingle roof, 1 x 4-inch tongue and groove painted ceiling board inside, high ceilings, tall double-run window sash, open attic, and walls without fire stops. Originally, two buildings had occupied the site; a three-classroom school built over a daylight basement which housed a lunch room, a furnace room and a workshop combined and a boys' and girls' lavatory and, separate and to the rear, a standard-size gymnasium. These two buildings were subsequently joined by a hallway and a kitchen with food-serving windows opening to hall and gym therefrom. The main exposure was a new school paralleling the target building on the south side, 9 feet distant. As safety measures during the burn this exposure was protected against collapsing walls by vertical 4 x 8-inch bracing and against radiant heat by salvage tarps and water curtains.

During the time of burning, temperatures remained in the 51-55°F range; humidity varied between 54 and 89 per cent; and a south to southwest wind ranged in velocities from 5 to 15 miles per hour.

"Snorkel" improvised

None of the participating fire departments is equipped with a ladder truck so a 45-foot aerial platform was obtained from the local utility company and rigged as a "Snorkel."

The versatility of this piece of equipment was amply demonstrated as it alternately performed rescues, made extinguishments and maintained a water curtain to protect exposures. Plans are now being made to incorporate the platform into the Marion County mutual aid move-up plan.

A cooperating fire alarm company completely wired the target building with a combination rate-of-rise—fixed-temperature detector heads which were connected by leased wires to the Gervais fire station for automatic alerting. They also furnished thermocouples and instrument panel for time-temperature readings which were recorded by state fire marshal personnel. Hundreds of feet of film were taken by their cameramen at their expense. These films were later edited with the state staff to form a training film. As the state has not allocated funds for the activities herein described, the financial aid so received was essential to the success of the program.

The U. S. Forest Service cooperated and had equipment in the area to mix a borate-wet water solution which was dropped by helicopter on various roof fire problems to test the effectiveness of aerial attacks.

For testing purposes a lumber manufacturing corporation installed a sheet of ¾-inch AC exterior plywood, pressure-treated with Koppers "Non-Com" salts and a 3 x 6-foot redwood curtain fire wall made of 1-inch kiln-dried boards in Classroom No. 2, as well as a 3 x 6 redwood panel of "crib" construction, made of 2 x 4's in the hallway.

Test No. 1

Conditions and objectives

Fire was started in Classroom No. 1. A 400-pound fuel load composed of old varnished desks was used to simulate actual school furnishings. One window was left partly open and the door kept ajar. Room volume was 6,000 cubic feet. Two automatic combination rate-of-rise — fixed-temperature detector heads were installed in the ceiling. Five thermocouples were placed. Interior of room was finished with 1 x 4-inch T & G boards, covered with several old coats of paint.

The attack was made through the classroom door after a fire-burn time of 11 minutes with a ceiling temperature reading of 680°F. A 1½-inch line equipped with a fog nozzle was used.

The objectives in Fire No. 1 was to have the local Gervais Fire Department respond from their station upon being alerted by the automatic alarm system which was directly connected to the station by lease wire. A pre-fire plan had been made which was to be followed according to normal station response.

Observations and conclusions

The first automatic detector head was activated in 1 minute, 25 seconds, sounding the alarm at the fire station. Ceiling temperatures registered approximately 160°F at this time. Normal response by Gervais volunteer firemen was made according to a pre-fire plan. The fuel load, small in proportion to the cubic volume of classroom was slow in generating sufficient heat to involve painted ceilings and walls. After a pre-burn of 11 minutes, maximum ceiling temperature registered 680°F. At this time Gervais firemen made an attack through classroom door using a 1½-inch line fitted with a 65-gpm fog nozzle. Fire was

Helicopter drops borate solution on roof fire. Effectiveness of method was demonstrated during the fire tests and much was learned concerning methods to overcome possible disadvantages

Improvised Snorkel, loaned by utility company proved so spectacular that county fire departments have included it in mutual aid plans for future emergencies

brought under control in less than a minute. The initial attack—indirect application of fog—was discontinued after about 10 seconds when it was discovered ceiling temperatures were not generating steam. A 20-second solid-stream attack extinguished the deep-seated fire. A total of approximately 30 gallons of water was used.

Test No. 2

Conditions and objectives

Fire was started in Classroom No. 2. This room, identical in construction to No. 1, with 6,000 cubic feet volume, was wired with two rate-of-rise detector heads in the ceiling and was thermocoupled. The objective was twofold: To test fire-resistant characteristics of various fire-stop materials and to serve as a control for comparison with Problem No. 3. A 3 x 6-foot sample of redwood curtain fire wall, constructed by nailing two courses of untreated kiln-dried 1-inch redwood boards to 2 x 6 studs, was carefully sealed to the center of the west wall of the classroom, open side to the wall and standing in an upright position. Thermocouples were placed at the 4-foot level on both the protected side and the fire side of the stop. A 3 x 6-foot piece of ¾-inch A.C. exterior plywood treated with fire-retardant salts was nailed to the wall next to the redwood fire stop.

Two separate fuel loads of varnished desks, totaling 800 pounds, were ignited simultaneously. A pre-burn of 10 minutes, 30 seconds brought the temperature at Couple No. 2 to 1180°F, at which time attack was initiated.

Helicopter view of school site during a burning test. Over 1,000 spectators watched the proceedings—*The Oregonian photo by Chuck Vonwald*

Observations and conclusions

In Problem No. 2, the two fuel loads were ignited in various locations and in rapid succession to give a fast buildup of heat. The first automatic detector sounded an alarm 45 seconds after ignition. The speed of response indicates activation was caused by rate of rise in temperature.

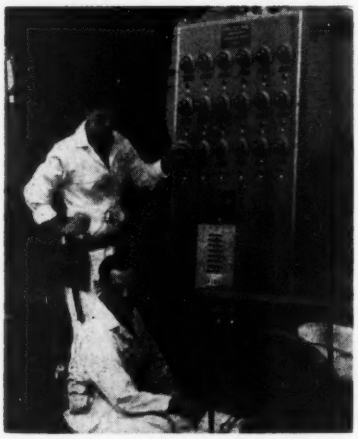
After a pre-burn of 10 minutes, 30 seconds, No. 2 thermocouple located 7 feet off the floor in the center of the south wall indicated 1180°F, at which time attack was initiated. An experienced crew made the attack with a 1½-inch, 95-gpm fog nozzle operating at 100 psi for 31 seconds, using 56.3 gallons of water. The inside attack was made through the classroom door using indirect fog application. High ceiling temperatures produced excellent steam action extinguishing all but deep-seated fire at points of origin.

Insulating characteristics of the redwood curtain fire wall were demonstrated by Couples T_4 and T_5. The

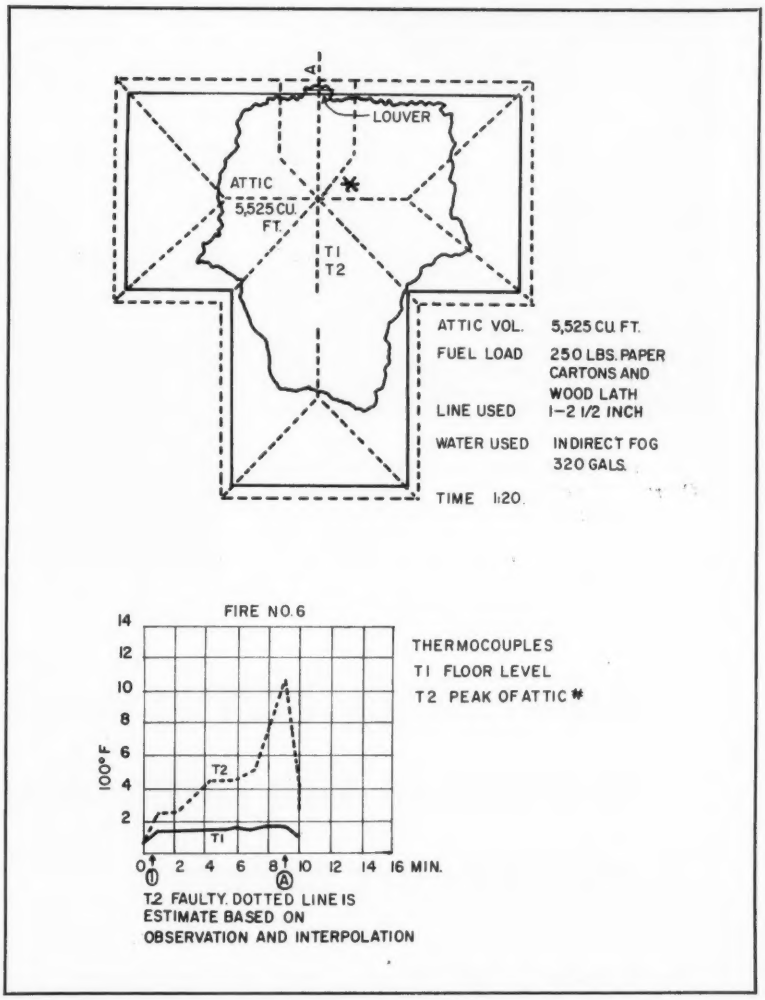
protected area registered a maximum temperature of 100°F at the 4-foot level, while outside temperature at the same level reached 840° during the 10½-minute test. Char on the redwood panel measured less than ⅛-inch at maximum and towards the floor level was negligible. When compared to the depth of char in the fir boards at comparable levels in vicinity of panel, it was found that the panel showed some less penetration. The test was of too short a duration to prove conclusive.

The exterior plywood pressure treated with fire-retardant salts and subject to the same fire and heat conditions as the redwood panel proved highly resistant to heat damage. The surface ply showed discloration at the 6-foot level but char was negligible. A control panel of untreated plywood in a similar position was charred through to the second ply.

Directing the test fire operations were Robert Mobley (left) and Cecil Dill of the state training staff



Fire detector alarm panel and thermocouple potentiometer were located at a central recording desk to maintain close control of all operations



Test No. 3

Conditions and objectives

Fire was started in Classroom No. 3. This room, identical in size and construction to Room No. 2, had been previously painted with two coats of Albi paint, No. 107-A interior type, on ceilings and walls. Alarm indicators and thermocouples were placed in comparable locations to those in Problem No. 2. Fuel loads were identical in type, location and weight. The attack crew of Problem No. 2, using the same nozzle and flow, were instructed to cease the attack when, in their opinion, fire was under control.

The objective in Fire No. 3 was to test by comparison the effect of fire-retardant interior paint. As nearly as possible, all factors in Problems No. 2 and No. 3 were duplicated with the exception of retardant paint.

Observations and conclusions

Due to thermocouple failure in Problem No. 2, the original plan to use 1,200°F ceiling temperature as a time of attack had to be abandoned, thus invalidating one of the control factors in determining the effectiveness of fire-retardant paint in this experiment.

Following the same ignition procedures as in Problem No. 2, a fast build-up of heat resulted. The first automatic detector activated at 10 seconds, clearly indicating a rate-of-rise rather than a fixed-temperature response. After a pre-burn of 13 minutes, Couple T_2 registered 800°F. At this time, attack was initiated through classroom using the same crew, hose, etc., as in Problem No. 2. Extinguishment was accomplished in 20 seconds using 46 gallons of water.

In comparing Problems No. 2 and No. 3, it was found that the protected room, subjected to a pre-burn which endured 2½ minutes longer than that of the control room, registered 800°F at the 7-foot level as compared to 1,180°F at a like location in the control room.

Continued on page 152

Fire Chief Peter J. Kuhn pointing to the transmitter control head mounted in his car. Operation of switches provide all radio information necessary to receiver and traffic controller mounted at intersection
—all photos courtesy Rad-O-Lite, Inc.

Engine No. 3 heading west on 12th Street uses left lanes approaching an intersection. The control indicator light which flashes on and off telling the driver that he does have control can be seen above the red light

Emergency traffic control system increases fire apparatus movement safety

By **MICHAEL A. CANNAVINO** and **PETER J. KUHN**
Director of Public Safety *Fire Chief*

CONTROLLING traffic at congested street intersections in such a manner as to present safe right of way to the emergency apparatus has long been the dream of progressive fire department officials. The only way to control this traffic at present is by means of specially operated traffic signals along the route being traveled.

This has been done by wired methods with a manual switch or a timer mechanism located in a signal station or a firehouse. Two such installations are in use in Erie, Pa. This method, however, presents no safety factor which will preclude crashes of intersecting apparatus. Base station radio-controlled emergency systems present the same problem. Also, neither of these methods provide for the occasion of apparatus coming into the controlled artery from the cross streets.

During 1959, the city council was approached by officials of a local electronics firm who claimed to have perfected radio equipment whereby traffic signals would be controlled from moving apparatus a distance of from one to four blocks ahead of the apparatus. This method of solving the problem sounded ideal but, in view of the fact that it had been tried by few others in the recent past, the City of Erie was somewhat reluctant to consider the proposal.

However, in September of 1959, it was agreed to install the new radio emergency traffic control system at three intersections in the city for evaluation purposes at no cost to the city. Two of the traffic lights were at corners where a one-way street intersects a two-way main artery. The third intersection was that of two one-way streets. It was desired by a committee of fire, police and traffic officials to control these intersections with a four-way red block if the apparatus approached on the two-way artery. If the apparatus approached any of these intersections from a one-way street, the traffic light would go to green ahead of the apparatus and to red on all other sides.

The Erie Fire Department used these lights for three months and their value was obvious soon after the installation was completed. The traffic control system not only changes the traffic signals to a predetermined emergency condition, but also presents positive indication to apparatus drivers that control has been established at each intersection. This is accomplished by white bullet lamps facing each direction of approach. When the driver of the signalling vehicle sees the flashing white lamp mounted on or very near the traffic signal, he knows that he has activated the system in his favor. Accidents involving intersecting emergency apparatus may thus be lessened through the use of this system. Since the white flashing control indicator flashes only in the direction of the controlling vehicle and can only flash in one direction at a time, any intersecting apparatus knows positively, by the absence of the control indicator in his direction, that he must use extreme caution. The same holds true for any possible failure in the traffic light, traffic light controller, transmitter, or any other

Continued on page 149

Improved test procedure lengthens fire apparatus battery life

Salem, Ore., fire department discarded hydrometers in favor of voltmeters with resulting increase of efficiency

Meter employed to check Salem apparatus batteries measures voltage in each individual cell. Simple color-coded calibration indicates cell condition

By CAPTAIN VINCE MULLIGAN

STUDY OF THE SERVICE obtained from batteries on fire apparatus in the Salem Fire Department about five years ago disclosed poor battery life, usually somewhat less than the guarantee period. A similar study of batteries in common cars and other nonemergency vehicles showed an average life of from 25 to 50 per cent longer than that listed in the guarantee of the manufacturer.

After some research the department made a marked change in the care of batteries and during the past five years, battery troubles have dropped sharply. Now the average life approaches that of nonemergency vehicles. The savings realized can be readily appreciated as the cost of some fire apparatus batteries is around $100.

A review of battery construction shows that each cell is made up of a number of positive plates, usually five or six, and a number of negative plates, usually six or seven, suspended in a solution of sulfuric acid and water with wood or other insulating separators between them. As a battery is discharged, that is, current being used from it, acid is absorbed into the plates, leaving a more diluted solution of acid. When a battery is charged, the reverse is true, acid is forced out of the plates into the solution of acid. During charging, some of the water is turned into hydrogen and is lost. The acid, however, doesn't vaporize so is lost only through leakage, spillage, etc.

The exact amount of acid in each cell is very important for several reasons. First, current must flow through the water-acid solution to complete the electrical circuit through the battery. Acid added to the water serves, among other things, to make the water a better conductor of electricity, the same as salt added to water. Therefore, if some of the acid is lost the internal resistance of the battery is increased and not as much current can be obtained. Second, not enough acid will be present to be absorbed into the plates during discharge to change plates to their uncharged state (lead sulfate) thereby decreasing the capacity of the battery. Third, and by far the most important damage done from acid loss, is the producing of false test readings on a hydrometer.

In the last case, a fully charged battery may read only partly charged and, consequently, is put back on the charger and unknowingly overcharged. This does irreparable damage to a battery. The positive plates warp, buckle and shed their active material, greatly shortening the battery life.

Our research five years ago showed batteries were losing some of their acid, but how? A little detective work uncovered the culprit—the hydrometer. An acid streak running down the wall below where the hydrometer was hung after daily use was the clue.

It was reasoned that after use, several drops of water-acid solution remained in the hydrometer and drained out before the next usage. Of these several drops, probably one or two were acid. One or two drops of acid doesn't amount to much by itself. However, if a battery is tested every day, these few drops multiplied by

Continued on page 155

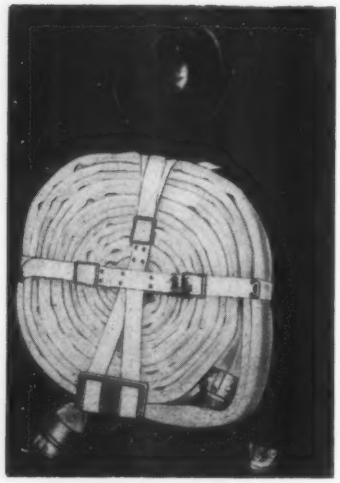
The author joined the Salem Fire Department in 1949 and has served as a hoseman, engine company driver and a fire prevention inspector. He was promoted to captain in 1956 and is currently with Engine Co. 3, East Salem Station

What's new . . . among the manufacturers

products · processes · personalities

Ferrell CD Horn

Ferrell Mfg. Co., Groton, N. Y., is marketing a signal horn powered by Freon gas which is designed for civil defense communication purposes. Three hand-operated models are available and it is claimed all have OCDM approval for matching fund purposes.

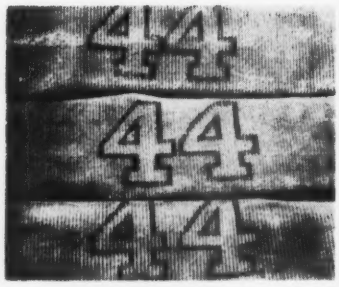


Doughnut Roll Carrier

What is said to be a lightweight, comfortable and sturdy hose-carrying device has been developed by the Atlas Safety Equipment Company, Inc., 175 North 10th Street, Brooklyn 11, N. Y. The unit, carried on the back, accommodates either one 2½-inch roll of hose or two 1½-inch rolls. The hose is placed on an aluminum base, which rests on the wearer's back and supports weight of the hose. A web strap secures hose vertically and horizontally, and is easily adjusted for comfort. It is used to carry hose to standpipes and hydrants for extension of underground lines and replacing burst lengths.

Miami Gets New G-E Radio Equipment

The City of Miami Public Safety Division has a major modernization program under way to improve communications in its police and fire departments. General Electric Company has delivered 163 G-E Progress Line mobile radio units to the division, 20 table-model transmitter-receivers, three desk remote control units, three 250-330-watt base stations and eight portables. Most of the new equipment is for single-frequency operation in the 152-174 megacycle band. The remainder is for both dual and single-frequency use in the 450-470 mc region.



Darley Decal Fire Hose Marker

W. S. Darley and Co., 2810 Washington Boulevard, Chicago 12, Ill., offers a series of 3½-inch yellow and black decal numerals to be used in desired combination to identify fire hose. It is claimed that legibility after exposure and abrasion demonstrates that decals are superior to any other marking method yet attempted. The decals are especially developed and produced for Darley by The Meyercord Co., 5323 West Lake Street, Chicago 44, Ill.

New Seagrave Foam Pumper Delivered to Florida Port

The Seagrave Corporation recently delivered a 1,250-gpm pumper to the Port Everglades, Fla., Department of Security. Powered by a 251-hp V-12 engine, the vehicle carries 600 gallons of foam liquid and 400 gallons of water in its tanks. A Rockwood automatic balanced pressure system proportions liquid foam to any of the discharge outlets as desired by means of a 75-gpm positive displacement pump. It can then be employed with hand

Continued on page 142

America's Most Experienced Fire Hose Producer Always Gives You:

DEPENDABILITY — Every BOSTON Fire Hose length is fully tested to your specifications . . . for pressure, elongation, expansion, twist, warp, and quality of couplings.

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Buy from the originator of circular woven fire hose.

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* DuPont polyester fiber.

Letters to the editor

School Fire Safety

To the Editor:

I have been following with great interest the many articles appearing in FIRE ENGINEERING on school fire protection since the Chicago School fire, in particular the current Round Table discussion, as well as a very enlightened article by Professor Gerald L. Maatman entitled "Misconceptions Concerning Safety of Life From Fire," in the October issue. This last article is by far the most perceptive and discerning that has appeared in FIRE ENGINEERING within my memory concerning this subject.

Because of the misconceptions nationally rampant relative to life safety from fire in schools and other high life-hazard occupancies, I would like to state my position for the record. It concerns two principles which have been recognized by most enlightened members of the fire service for as long as I can remember.

The highest form of fire protection that can be afforded a high life-hazard occupancy such as a school is the installation of a complete *"approved"* automatic sprinkler system which is connected to an interior fire alarm warning system and also connected to the municipal fire department alarm system.

The only other necessary adjunct to the above-described fire protection is as old as the professional fire service itself. It is the age-old single exit code which apparently has been lost sight of in some instances. It requires, and I quote, "that each floor of every public building shall have at least two or more independent means of egress remotely removed from each other and extending to grade."

I believe that there is no substitute or alternative for the foregoing and I challenge anyone to successfully refute my stand.

Sincerely yours,
James M. Brett
Chief of Fire Department
Kingston, N. Y.

National Fire Defence Plan

To the Editor:

I read the editorial in your November issue with great interest, and I see that you, speaking on behalf of the United States Fire Service, came out strongly against any nationalisation of your fire service in the defence plan of the nation.

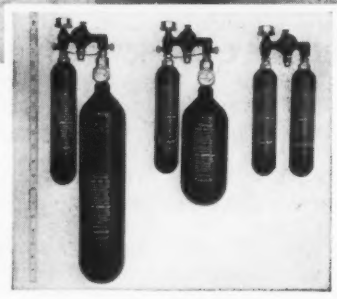
The nationalisation of the British Fire Service was carried out in the teeth of fierce opposition from the service itself, and even now I suppose there are many professional fire officers who are opposed in principle to any return to national conditions. We were nationalised in the stress of war at an extremely awkward time during enemy attack, but I do not believe that any really intelligent fire officer thinks other than a National Fire Service is an absolute necessity in the over-all defence plans of a nation.

After all, the conditions in war have changed so much in the last 50 years that a country is no longer secure on the home front. In fact, it seems likely that this will be the battle front of the future. Therefore, civil defence, of which the fire service is a part, becomes the fourth arm of the nation, the army, navy and air force being the other three. Surely, no professional fireman in the United States can contemplate a parochial army, navy or air force. These services could not possibly function on a local authority basis. Will you tell me how you expect the fire service, playing an equally important part to these other three forces in any future war, to operate successfully at local level?

We have been through it all before. We opposed it as you are now doing. We were wrong, and I hazard a pretty shrewd guess that you are very wrong now.

Sincerely yours,
K. N. Hoare, M. I. Fire E.
Chief Fire Officer
Manchester Fire Brigade
Manchester, U. K.

Positive Pocket-Sized Protection



...against breathing hazards

Now firemen can add precious minutes to their search for trapped victims. Rockwood's lightweight PocketAIRE, the most compact self-contained breathing apparatus made, permits firemen to put in action faster and work more efficiently without hindrance by bulky equipment. PocketAIRE is small enough to fit in pocket, clamp to fire coat or be worn in a shoulder harness.

What's more, by using pure, clean oxygen PocketAIRE supplies the most concentrated, most effective element to safeguard human breathing. Another *extra* protection feature, on all PocketAIRE units, is the safety cylinder that allows 5 minutes for escape. Three models are available for a full 30 minutes . . . a full 20 minutes and a full 10 minutes. Cost pennies to refill and no maintenance required.

Protect every fireman in your department with economical, safe, simple to use Rockwood PocketAIRE.

For more details, write to ROCKWELL SPRINKLER COMPANY, 2002 Harlow St., Worcester 5, Mass.

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False alarms

The firemen's convention was running behind schedule and the delegates were in a surly mood. Following a lengthy and far from bright financial report, the secretary-treasurer made an impassioned plea for an immediate and substantial raise in dues.

At once pandemonium broke loose and the chairman had difficulty in restoring order. Finally he gaveled the unruly assembly to order and announced, "We're wasting time. This has been a long session and there is still a number of items remaining on the agenda. Is there anything you wish to cut?"

A voice from the rear of the room shouted, "Yes, the throat of the last speaker!"

Miscarriage of Justice

Kinkchaser, upon the advice of his physician, had taken up a hobby and spent most of his spare time in his chosen avocation of painting landscapes. Within a short time the local art society announced a contest and Kinkchaser entered one of his better efforts.

To everyone's surprise his artistic masterpiece was selected for an award. The local newspaper art critic recorded his dismay with the event by the caustic comment: "They couldn't find the artist so they hung his picture!"

On Target

The chief had taken a few days of his vacation and upon return to his office, said to his secretary, "Any messages for me while I was out?"

"Yes sir," was the reply, "one of those ducks you were hunting last week end called and left her number."

The absent-minded professor and his absent-minded wife were spending a quiet evening at home when someone banged on the door. She yelled, "O my goodness, it's my husband!" and he jumped through the window.

Three cellmates in a Russian jail were talking over how they got there. "I was jugged for being absent from work," said the first, "when I was only a little late."

"Me?" said the next fellow. "I came to work early one day and was accused of being a capitalist spy."

"I got to work on time one day," said the third, "and was accused of owning an American watch."

"Is it windy outside?"

Society note: "The ladies of the Helping Hand Society enjoyed a swap social on Friday evening. Everybody brought something they didn't need. Many of the ladies were accompanied by their husbands."

A mule and a Volkswagen met on a road.

"What might you be?" asked the mule.

"An automobile," replied the Volkswagen, "and what might you be?"

"I'm a horse," replied the mule. And they both laughed.

What's the Use?

Company captain: "Why is it your vacations never seem to concern you very much?

Kinkchaser: "It's really quite simple. The chief here says when I can go and the chief home says where."

There is only one thing wrong with the present generation—a lot of us don't belong to it anymore.

The fire fighter candidate appeared for his physical exam and exclaimed to the department physician, "Shall I strip to the waist?"

The bored doctor replied, "Yeah, from both ends!"

Unimpressed

Plugwrench had been away on a hunting trip. Upon his return to work he regaled his shift with a full report of his adventures including duck hunting.

"The birds began to fly at sunrise," he said. "The cold, icy water stretched out on all sides of me as I raised my shotgun. It went off with a bang and there in front of me lay a dead duck."

A voice from the rear inquired, "How long had it been dead?"

A Man Is Known—

The chaplain, returning home late one evening from a sick call, noticed the Old Timer staggering down the street.

Filled with compassion for the old rounder he said, "Let me help you to the door." He then guided his floundering charge gently home.

At the door the Old Timer pleaded with the good reverend to come into the house with him. But the chaplain demurred on the grounds it was too late.

"Pleash, Chaplain," our hero beseeched him. "Jush't wait for a minute. I want my wife to see who I was out with tonight."

Sometimes it seems that all we learn from experience is that we have made another mistake.

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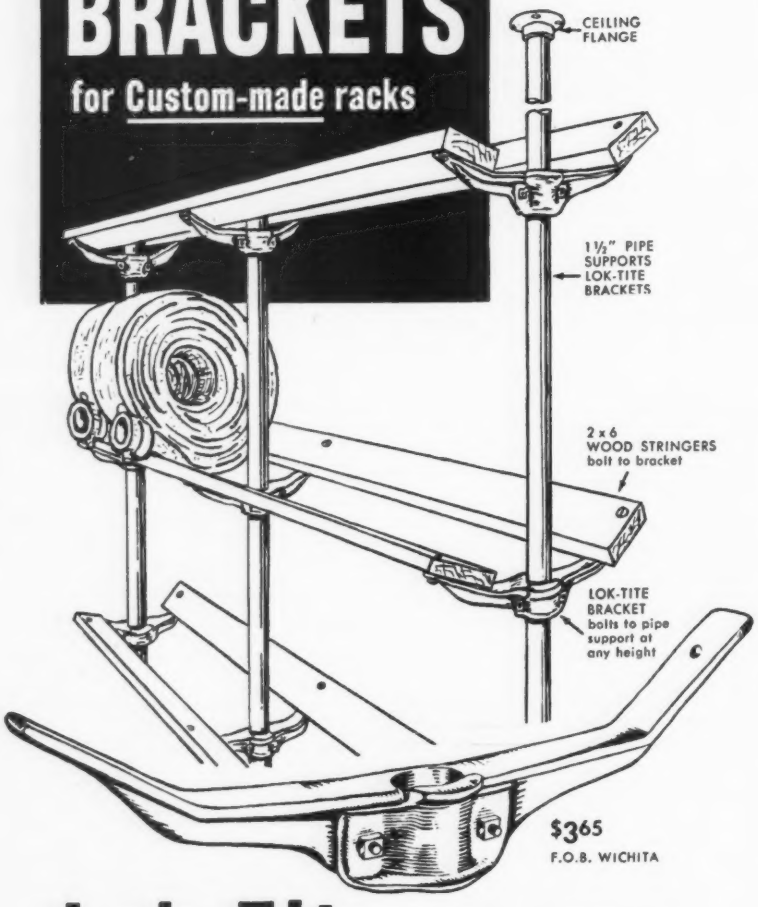
BRACKETS
for Custom-made racks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- Simple to install
- Easy to adjust
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What's burning

THE FOLLOWING LIST includes fires of $10,000 and over in the United States and Canada for the period from December 1st to December 29th.

Brewton, Ala.—J & M Chevrolet Co. damaged.
Decatur, Ala.—Building housing Quality Model Laundry and Dry Cleaning Co. plant destroyed.
Opelika, Ala.—Pepperell textile plant damaged. Duct filled with resin residue.
Springville, Ala.—One-hundred-and-20-year-old Herring Inn heavily damaged.
Lake Village, Ark.—Lake Village Implement Co. destroyed.
Little Rock, Ark.—Coleman Dairy storage building damaged. Short circuit.
Morrilton, Ark.—The Crestline, Inc. boat factory damaged.
Rogers, Ark.—Linkway Furniture Store destroyed; adjoining Applegate Drug Store and an optometrist's office, damaged.
Alameda, Calif.—Christ Episcopal Church damaged.
Burlingame, Calif.—Rudd Buick Co. warehouse destroyed. Burglar's blowtorch.
Los Angeles, Calif.—Downtown storage building, owned by Lucky Plastic Co., damaged.
Los Angeles, Calif.—K & K Machine Works plant and apartment at 7422-7430 South Compton Avenue damaged.
Marysville, Calif.—Gordon Gilmore's Electrical Supply Store, beauty college, Jim-Tony Auto Body Shop and Holtman Auto Agency, destroyed.
San Francisco, Calif.—Alioto's Restaurant, 8 Fisherman's Wharf, destroyed.
San Francisco, Calif.—Old Coast Line Hotel destroyed.
Truckee, Calif.—Donner Theatre and adjoining apartment dwelling destroyed.
Bethel, Conn.—Terre Hautes estate damaged.
Bridgeport, Conn.—Boiler Repair & Welding Shop, Inc. extensively damaged.
Mystic, Conn.—Business block housing Slifkin & Co. paint and hardware store, Berry's Drug Store, Kinney's Jewelry Store, Strand Theatre, barber shop, dress shop and several offices, destroyed; Mystic Hotel and Cottrell Lumber Co. damaged.
Waterbury, Conn.—Salmon Ford Agency destroyed.
Dover, Del.—Cancellation Shoe Center heavily damaged.
De Land, Fla.—Dwelling of Dr. Ben Smaller destroyed.
Marianna, Fla.—Gold Kist Peanut Co. and Florida Public Utilities Co. power plant damaged.
Tampa, Fla.—Blue Stack Towing Co. and Tampa Marine Co. damaged.
Atlanta, Ga.—Apartment building at 1708 Peachtree Street, N. E., heavily damaged.
Fitzgerald, Ga.—Roundtree-Hunter Lumber Co. damaged.
Fort Benning, Ga.—Patton House, former dwelling of late General George S. Patton and recently used as officers' club and museum, destroyed.
Gainesville, Ga.—Piedmont Poultry Co. warehouse at Gainesville Airport partially destroyed.
Moscow, Idaho—Creighton Building destroyed. Faulty fuse box.
Canton, Ill.—Fulton County Glass Co. and King Auto Electric Co. garage destroyed; Main Sales and Service, retail auto firm, damaged.
Chicago, Ill.—Four-story warehouse housing unsold Christmas toys, damaged.
Peoria, Ill.—Reliable Tire Co., P. A. Bergner Co. warehouse and Behm & Hagemann Inc., wholesale lawn, garden and farm supply firm, damaged.
Springfield, Ill.—Great Western Equipment Co. damaged considerably.
Anderson, Ind.—First Methodist Church, cafeteria, YMCA building, Indiana Employment Security Division office and Anderson Newspapers plant, damaged. Arson.
Kokomo, Ind.—Building housing Leath & Co.

destroyed; Kamber Clothes, Pittsburgh Plate Glass Co. and several other stores, damaged.
Ligonier, Ind.—Farm Store, Bill Kitson's Barber Shop, Kaiser Insurance Agency and Eagle Lodge quarters, damaged.
Merrillville, Ind.—Five Star Supermarket destroyed.
Waldron, Ind.—Home Lumber & Coal Co. yards destroyed.
West Liberty, Iowa—Nealson Livestock Sales barn destroyed.
Ashland, Ky.—Office building housing Steckler's Men's Store, Pollock's Jewelry, Lyda Ellis' Dress Shop, Sublett's Jewelry and professional offices, badly damaged.
Central City, Ky.—Central City Produce Co. building damaged.
Covington, Ky.—Visalia Baptist Church destroyed. Defective furnace.
Georgetown, Ky.—Kemper's Grocery, barber shop, drug store and sweet shop, damaged.
Lexington, Ky.—Concession building at Circle 25 Drive-In-Theatre destroyed.
Louisville, Ky.—Bowling alleys, billiard room, restaurant, etc. of Parkmoor Recreation Center, damaged.
Louisville, Ky.—Long Run Baptist Church.
Walton, Ky.—Beaver Christian Church destroyed. Overheated stove.
Whitesburg, Ky.—Combs Building, housing dairy bar, automobile parts firm and apartments, destroyed.
New Orleans, La.—Durham Wholesale Distributors poultry supplies warehouse heavily damaged. Possible arson.
New Orleans, La.—Insulation materials warehouse destroyed; two adjacent buildings damaged.
New Orleans, La.—Parochial School damaged.
New Orleans, La.—One-hundred-year-old Circle Theatre destroyed; Gluck's Restaurant and Sally's Praline Shop damaged.
Plaquemine, La.—Cash Wholesale Grocery and Sales Co. warehouse damaged.
Damariscotta, Me.—Damariscotta Hardware Co., Wheeler Radio & Television Shop and offices and apartments in Main Street building, damaged.
Houlton, Me.—Houlton Grange Store destroyed.
North Parsonfield, Me.—Apple packing plant of Mrs. Myron O. Lord destroyed.
Annapolis, Md.—Capital-Gazette Press building damaged.
Baltimore, Md.—Frank G. Schenuit Rubber Co. tire plant heavily damaged.
Baltimore, Md.—Morris Building, occupied by Kanes, Inc. furniture store, Travel Service, Brook & Co. bankers, Maternity Clothes and Deane's Dress Shop, heavily damaged.
Baltimore, Md.—Stern's Variety Store, destroyed.
Baltimore, Md.—United States Public Health Service Hospital heavily damaged.
Ruxton, Md.—Dwelling of Hugh E. Kabler destroyed.
Abington, Mass.—One-hundred-year-old business block, housing Abington National Bank, Slattery's Insurance Co., antique shop, printing firm and Wayside Furniture Co. storage area damaged.
Charlestown, Mass.—Purity Sugar Cane Co. and Diamond Nugget Cafe destroyed. Explosions.
Chicopee Falls, Mass.—Rich Lithographing Co. destroyed.
Harwich, Mass.—Harwich Port Shopping Center, housing A & P Supermarket, Sports Center, Bayberry Gift Center, Music Notes Store, B & B Delicatessen & Liquor Store, barber shop and post office, damaged.
Lawrence, Mass.—Standard Coat & Apron Supply Co. and K & L Shoe Co. plant damaged.
Marblehead, Mass.—Gilbert & Cole coal storage building damaged.
North Easton, Mass.—Ralmar Corp. woodworking plant considerably damaged.
Peabody, Mass.—Building housing Fred Cerrana's barber shop, Mike Mooka's Market, Guiness Bakery, Barney's Grill, Quinlan Square Pharmacy and apartments, damaged.
Taunton, Mass.—Wonder Furniture Store destroyed; Hanson's Drug Store, China Clipper Restaurant and several offices, damaged.
Adrian, Mich.—Dairy barn at Fairlawn Dairy destroyed.
Houghton Lake, Mich.—Radio Station WHGR destroyed.
Monroe, Mich.—Nursery cellars of Ilgenfritz Nurseries, Inc. destroyed.
Plymouth, Mich.—Plymouth Fertilizer Co. damaged.
Romeo, Mich.—St. Paul's Episcopal Church damaged. Explosion.

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THE FIREMAN'S FIRST LINE OF DEFENSE

SINCE 1836

In Top-Grain Leather

No. 5A
The "NEW YORKER"
REGULATION

Three other models in leather available, in both regulation and drop brim styles.

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The "SENATOR"
REGULATION

Also available in aluminum, in streamlined drop brim patterns.

In "Flint-Flex" Plastic

No. 900
The "CLIFTON"
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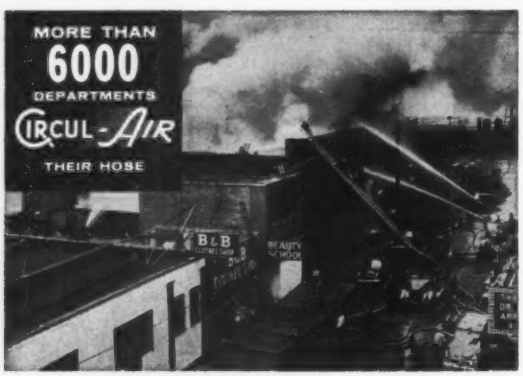
Other approved styles, in plastic, are described in our Catalog.

"THERE IS NO SUBSTITUTE FOR EXPERIENCE"

Write for Catalog 361

CAIRNS & BRO., Inc. – Allwood, Clifton, N. J.

Guntown, Miss.—Four buildings of Comfort Furniture Mfg. Co. destroyed or damaged.
Shannon, Miss.—Siesta Mfg. Co. warehouse virtually destroyed.
Eldon, Mo.—Elementary School damaged.
Portsmouth, N. H.—Pierce Hall Building, housing American Legion ballroom, Green's Drug Store, hardware store, laundromat, tailor shop and cobbler's shop, considerably damaged.
Allenhurst, N. J.—Summer dwelling at 16 Corliss Ave. destroyed.
Asbury Park, N. J.—Stern's Dress Shop destroyed.
Atlantic City, N. J.—Clarendon Hotel damaged.
Bayonne, N. J.—National Shoe Store and Jamie's Children's Clothing Store destroyed; Paramount Shop and Miles Shoe Store damaged.
Franklin, N. J.—Peet's Storage Warehouse destroyed.
Jersey City, N. J.—Huntington Hotel and adjoining tavern damaged.
Lyndhurst, N. J.—Giaccione Bros. & Co. warehouse damaged.
Morristown, N. J.—General George Washington's headquarters national shrine damaged.
Newark, N. J.—Three dwellings at 196, 198 and 200 Thomas Street destroyed; Lincoln Metals Co. plant damaged.
Paramus, N. J.—Midland Bank considerably damaged.
Passaic, N. J.—Martinique Caterers Inc. destroyed.
Paterson, N. J.—Building housing Universal Hand Laundry and apartments destroyed.
Port Morris, N. J.—Confectionery store, Center Street, destroyed; dwelling in rear, damaged.
Red Bank, N. J.—Bootery Shoe Store, Seldin's Jewelry Shop and Blue Ribbon Shoe Repair, destroyed; 13 other firms damaged.
Roselle, N. J.—Food Fair Supermarket destroyed; adjoining Barber Pharmacy damaged. Faulty wiring.
Totowa, N. J.—Farm Goods Store destroyed.
Trenton, N. J.—Apartment house and funeral home at 129 Spring Street destroyed; two adjoining buildings damaged.
Wildwood, N. J.—Holliday's Restaurant on the boardwalk destroyed; Hotel Eugenia heavily damaged.
Wontage, N. J.—C. W. Brownell Co. sawmill and lumber yard damaged.
Brooklyn, N. Y.—Aircraft carrier "U. S. S. Constellation" damaged at N. Y. Naval Shipyard.
Brooklyn, N. Y.—Apartment dwellings, L. Czike, candy manufacturers; McCaddin Funeral Home; retail grocery store; laundry and St. Sebastian's Pillar of Fire Church, all located at 7th Avenue and Sterling Place, damaged by airplane crash.
Brooklyn, N. Y.—Axel Plastics research laboratories considerably damaged.
Falconer, N. Y.—Royal Electric & Appliance Co. store, housing a restaurant, sporting goods store, apartments and Falconer Post Office, destroyed or damaged.
Kattellville, N. Y.—Barn and meat production and distribution center of Runacre Farms, Inc. destroyed.
Lockport, N. Y.—Magic Carpet Shop, adjacent stores and dwellings, destroyed. Defective gas heater.
Mount Vernon, N. Y.—Board of Education administration building damaged.
Syracuse, N. Y.—Eight-story Borst Building and adjacent Lincoln Bank building damaged.
Vestal, N. Y.—Vestal Theatre destroyed. Defective wiring.
Beaufort, N. C.—Standard Products Co. damaged.
Belmont, N. C.—Crescent Spinning Co. warehouse destroyed.
Cerro Gordon, N. C.—Two dwellings and a warehouse destroyed.
Charlotte, N. C.—Uncle Sam's Loan Office, Pliney Furniture Co. and Myers' Furniture Co. damaged.
Fuquay Springs, N. C.—New Deal Tobacco warehouse, Farabow & Howard Fertilizer Co. and restaurant nearby, destroyed.
Jackson, N. C.—W. P. Morris Lumber Co. damaged.
Kinston, N. C.—Dupree children's store, Ann's Dress Shop, Erskine Jewelry Store and the Bootery Shoe Store, destroyed; Harvey's Department Store and Baker's Furniture Co., in adjoining building, damaged.
Raleigh, N. C.—Caraleigh Furniture Co. workshop destroyed.
Rocky Mount, N. C.—Williford Elementary School damaged.
Varina, N. C.—Tobacco warehouse, garage and cafe destroyed; dwelling and seven vehicles damaged.
Winston-Salem, N. C.—Fairview Elementary School destroyed.
Winston-Salem, N. C.—Recreational center at Columbia Heights Elementary School for Negroes destroyed. Arson.
Barnesville, Ohio—J. C. Penney Department Store, Moose Lodge and hardware store, damaged.
Chillicothe, Ohio—Mt. Logan Laundry and Dry Cleaning Co. destroyed.
Cincinnati, Ohio—Alber's Supermarket destroyed.
Columbus, Ohio—American Aggregates Corp. damaged.
Dayton, Ohio—Storage building occupied by Dayton Tire and Rubber Co. damaged.
Franklin, Ohio—Farm dwelling of Richard Stoutenborough destroyed.
Oak Hill, Ohio—Oak Hill Foundry Machine Co. damaged.
Springfield, Ohio—Horse barn on Doyt Shierenbeck farm destroyed. Defective flue in stove.
Warren, Ohio—Barn and 19 harness racing horses at Trumbull County Fair grounds, destroyed.
Cottage Grove, Ore.—Brock-Vogel Building destroyed.
Milwaukie, Ore.—W. F. Voss building retread plant destroyed.
Butler, Pa.—Garage, three coal trucks and 28 new truck tires, destroyed.
Eddystone, Pa.—Eddystone Elementary, Jr. and Sr. High School damaged.
Fox Chapel, Pa.—Dwelling of S. Vance Wiebel damaged.
Honesdale, Pa.—St. Joseph's Roman Catholic Church destroyed. Defective heating system.
Lewisburg, Pa.—Ellen Clarke Bertrand Library at Bucknell University damaged.



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Montrose, Pa.—Dean Phipps Department and General Store and six apartments on upper floors destroyed. Oil heater explosion.

New Castle, Pa.—Fisher Bros. Dry Goods Store, adjoining jewelry store, Authenreith Dollar Store and finance office, damaged.

Philadelphia, Pa.—Benjamin Noble, Inc. plant heavily damaged. Arson suspected.

Philadelphia, Pa.—Dwelling, which includes two apartments and Merit TV Service, heavily damaged.

Philadelphia, Pa.—Philadelphia Gas Works plant damaged. Gas generator automatic control malfunctioned.

Philadelphia, Pa.—Waiters & Bartenders International Society Club and Pirate Ship, tavern, both heavily damaged.

Warrior Run, Pa.—Toledo's Restaurant, apartment, adjacent dwelling and hardware store, destroyed. Defective heating plant.

Williamsport, Pa.—Lycoming County Historical Society Museum heavily damaged.

Newport, R. I.—Building located 30 feet from Sims Hall on Coaster's Harbor Island damaged.

Clemson, S. C.—Main building of Clemson Lumber Co., housing offices, shop, paint room and some lumber racks, destroyed.

Greenville, S. C.—Super Supply Co., Franchised Business Inc. and office of J. H. Kirkland destroyed.

Chattanooga, Tenn.—Chattanooga Tent and Awning Co. damaged.

Dayton, Tenn.—Dayton Department Store, Roger's Drug Store, Thrift Store, Clemon's Bros. furniture store, Dr. W. A. Thomison clinic and apartments, destroyed or damaged. Furnace explosion.

Humboldt, Tenn.—S & S Dollar Store, City Bargain Store and Christmas Auto Supply Store, destroyed.

Jefferson City, Tenn.—Jefferson City Recreation Center destroyed.

Kingsport, Tenn.—Power substation of Kingsport Utilities damaged.

Knoxville, Tenn.—Home Lumber Co., dwellings of Willis Darnell and Mrs. Robert Akins and trailer dwelling of Grove Moore, destroyed. Faulty wiring.

Knoxville, Tenn.—Knoxville Scenic Studies Inc. damaged. Paraffin explosion.

Winchester, Tenn.—Bennett's Pharmacy destroyed; adjoining Time Jewelers and Winchester *Herald-Times* damaged.

Austin, Tex.—Commodore Perry Hotel damaged.

Richmond, Va.—Bailey Lumber Co. plant destroyed; adjacent building of R. P. Johnson & Sons damaged.

Stuart, Va.—Medical clinic owned by Dr. Archer K. Tullidge destroyed.

Entiat, Wash.—Entiat Valley Warehouse destroyed.

Seattle, Wash.—P.X. Supermarket, Boeing Airplane Co. office, and drapery shop, destroyed. Faulty furnace—broken gas line.

Tacoma, Wash.—Mayfield Dam Concrete Mixing plant damaged.

Hamlin, W. Va.—Dwelling of Marvin Booth destroyed; nearby buildings, housing a beauty shop and Lincoln County health nurse's office, damaged.

Cudahy, Wis.—Residence of Edward Merkel damaged.

Madison, Wis.—The 16 unit Surf Club apartment building damaged. Fire believed caused by cigarette.

Marytown, Wis.—Pelting building, including some 4,000 pelts of the Bartel-Winkel Fur Breeders Inc., destroyed.

Milwaukee, Wis.—Bobke Pipe & Tubing Bending Co. damaged. Gas torch used to melt resin in pipes caught fire and spread.

Milwaukee, Wis.—Warehouse of Wenzel & Henoch Corp., plumbing firm, gutted by three-alarm fire.

Milwaukee, Wis.—Sanger Electric Co. and apartment above damaged.

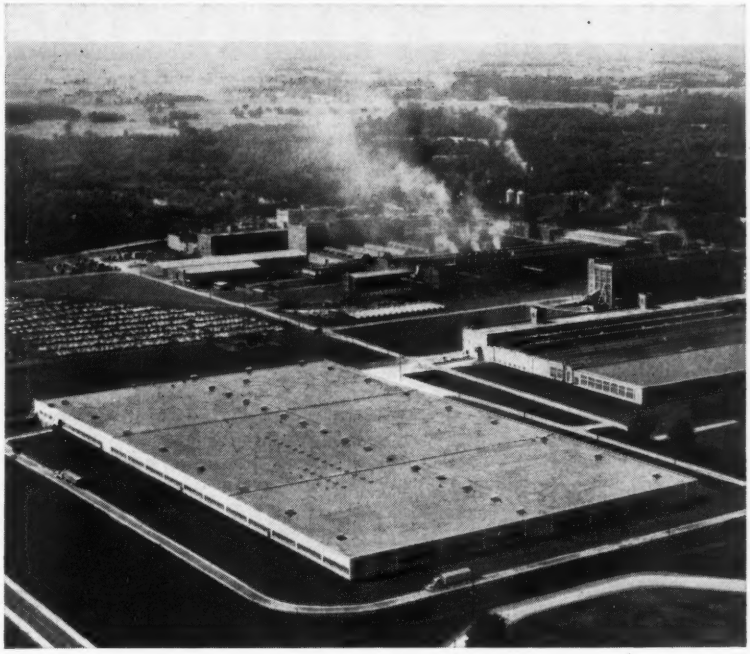
Racine, Wis.—A. C. Christensen Welding Service and Wohlrab Gear Machine Co. gutted by fire.

Wauwatosa, Wis.—Golden Chicken restaurant, newly-opened, virtually destroyed. Explosion believed to have been caused by leaking gas main.

Milwaukee, Wis.—Hampton House, supper club and tavern, damaged. Arson.

Rhinelander, Wis.—St. Mary's Catholic Church completely destroyed.

Whitefish Bay, Wis.—Home of Carl Friend damaged. Short in radio. □□



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Kohler engines, manufactured since 1920, are being increasingly specified for equipment used in agriculture, construction, industry and recreation. Kohler electric plants, known the world over for reliability, provide efficient electric power for a wide variety of sole supply, portable, automatic stand-by and marine uses.

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The new factory is part of a continuing plan of expansion and diversification by Kohler Co.

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Among the buffs

By PAUL C. DITZEL

BE THERE A BUFF or fireman alive who doesn't romanticize the era of horse-drawn steamers, hook and ladders, chemical wagons, and hose reels?

Never has this essence of yesteryear been better captured than in a feature story by Bob Williams writing in the Buffalo *Evening News*. I know not whether Bob was a buff before he undertook his story, but a firefan he must be after writing it.

Drawing extensively upon the memoirs of Jacob Durrenberger, first superintendent of horses of the Buffalo Fire Department, Williams provides an aura of color which should provide plenty of material for watch desk reminiscences these cold winter nights in Buffalo firehouses.

"Usual indoctrination for a new horse," writes Williams, "included a few weeks at headquarters hauling supply wagons and getting used to the sight of flashy red trucks and wagons and the sound of clanging bells and the 'joker' alarm that punched in tape the location of the fire.

"Put next on the 'extra' list, the new horse was trained to respond to the bell's insistent clang. A fireman, pushing a button beside the alarm, caused the stable door to fly open. The horse soon learned to take its assigned place in front of the engine or the hose cart."

Williams recounts that the horse stood for hours waiting with others for the gong to hit. The animals' bit was removed only at mealtime. During slack periods, the driver would hitch the horses to a light spring wagon and exercise the animals, though never letting them to stray far from the register.

Jake Durrenberger held that it was easier to train two horses at a time.

The Buffalo *Evening News* reporter tells the story of one firehorse, "Charlie," who fell through a hole in the bridge over the Hamburg Canal. "Charlie" swam through the cold water, clambered up on shore, and walked up a flight of stone steps to Main Street where he patiently waited for the firemen to chip the icicles from him and salve his wounds (and pride).

And then there is the story of "Dandy" a big dapple gray who died—of a broken heart it is said—the night that Buffalo's neighbor, Niagara Falls, replaced the horse-drawn rigs with motorized apparatus. "Dandy's" running mate, "Colonel" died soon after and both horses now are enshrined in the memories of Niagara Falls firemen.

"When retirement time came for a horse," says Williams, "there were plenty of people who wanted to buy it. They were good for farm work; but most hucksters and junkmen wanted nothing to do with old fire horses."

One huckster learned the hard way while shouting his wares in the vicinity of Engine 3's quarters.

"The horse, a brown gelding named 'Texas' that had been retired three years before, plodded along drowsily, its head hanging low as it dragged the wagon along the street," says Williams.

"Suddenly the alarm sounded in the firehouse. The horse lifted its head, its eyes getting back their old sparkle as the steam engine roared out of the house with black smoke belching from its stack.

"Instantly, old Tex broke into a run, the bit clenched between its teeth as it chased the engine and its three-horse team down the street. Close behind, but unable to catch up to the old firehorse, came the hose cart and its two-horse team."

A sunny Southern California salute to the Buffalo *Evening News* (where I served my cubship) for this valuable bit of lore.

Also from the wintry East comes an

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announcement from The 255 Fire Club, 1345 Rogers Avenue, Brooklyn 10, N. Y., of its new officers. They are: John Barbere, president; Dan Buckley, vice president; John Cederholm, treasurer; and Al Barbere, secretary. The announcement came from S. Hockberg.

Closer to home, Long Beach, Calif., Fireman Jim Salisbury, 1031 Luray Street, would like to exchange picture postal cards with firemen in some of the 56 foreign countries reached by FIRE ENGINEERING. He says he has correspondents in Cape Town, Australia, and in Madrid.

Until the bells go down again next month, please continue to send your buff club anecdotes and personal observations to me at 4234 Don Diablo Drive, Los Angeles 8, Calif. I regret that letters cannot be acknowledged, other than in this column. □□

Memphis F.D.I.C. Program Set

Demonstrations showing how fires in atomic weapons may be successfully controlled by municipal and other fire services will highlight the 33rd annual Fire Department Instructors Conference during its four-day meeting in Memphis, Tenn., at Ellis Auditorium, February 28 through March 3rd, E. T. Cox, chairman, has announced.

A special instructional team from the Atomic Weapons Training Group, Defense Atomic Support Agency, Sandia Base, N. M., will conduct the training. No nuclear material or radiation will be involved in these demonstrations which will occupy one entire afternoon of the conference.

The conference also will devote considerable time to new firemen's training techniques and new fire prevention methods, in addition to the usual demonstrations of new fire control appliances and methods and industrial fire control problems.

The conference, sponsored jointly by Western Actuarial Bureau, Chicago, and the Memphis Fire Department, E. A. Hamilton, chief, is expected to draw more than 2,500 fire service leaders to Memphis from over 40 states, Canada and several foreign countries. Chief Hamilton serves as conference host and co-chairman. Mr. Cox is director of the Fire Prevention Department of Western Actuarial Bureau.

H. A. Ritgerod

New York City Plans Purchase of Apparatus

The New York City Department of Purchase asked for bids until January 31 for seven combination 100-foot metal aerial ladder-water tower trucks, cab-forward or tilt-cab; 10 cab-forward, 1,000-gpm pumpers with one or two-stage centrifugal pumps and 375-gallon booster tanks, and four squad trucks, parcel delivery type, capable of carrying seven men and equipment.

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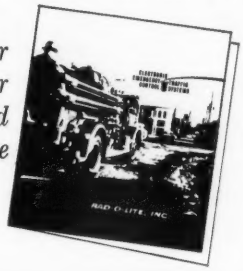

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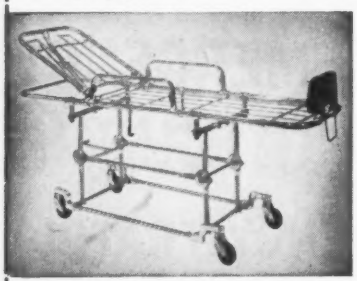

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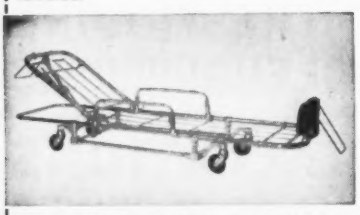

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The round table...

Discussion of current fire department and fire management problems

School Fire Prevention Practices

THIS IS THE SIXTH installment of the Round Table on fire prevention practices in the schools.

Readers are invited to participate in this discussion which will be continued in the March issue. Address replies to Round Table Editor, FIRE ENGINEERING, 466 Lexington Avenue, New York 17, N. Y.

The Discussion

Steve B. Logan, Dep. Chief, Lexington, Ky.: Regularly scheduled fire prevention inspections are made monthly by the principal and custodian of each private and parochial school. At each quarterly inspection, a member of our fire prevention bureau completes the report. We use the National Board inspection form for schools. City fire prevention ordinance and state laws give us the authority to inspect and enforce violations of the codes. Also, we require monthly fire drills, with written reports from the principal to the fire prevention bureau showing the date, time of evacuation (average two minutes), blocked exits and other pertinent data. Spot drills are held by the inspectors.

All schools are equipped with an approved closed-circuit electrically supervised fire alarm system, with dual source of power provided by wet batteries with trickle charger.

Automatic detection is required in all hot spots such as basements, kitchens, lounges, attics, storage rooms, laboratories, and shop areas. In addition to the automatic alarm systems, we are requiring automatic sprinkler systems in all schools with ordinary construction. These systems and the present alarm systems, are connected to a master fire alarm box. This phase of our program started in 1959. We have five schools completed and the others will be completed in 1961.

Smoking is permitted only in teachers' lounge rooms.

Each school year, we hold a school for the teachers and custodians with the following subjects: (1) What to do in case of fire and/or drills; (2) exits; (3) location of electrical disconnect; (4) location of gas meter and cutoff; (5) types and use of fire extinguishers; (6) how to make an inspection of the school; (7) housekeeping; (8) storage; (9) flameproofing (such as Christmas trees); (10) flammables.

Films are used to a good advantage during these sessions. Last year, we showed the film, "Why."

We have wonderful cooperation from our school officials. They and the P.T.A. are working constantly for better and safer schools.

John A. Martin, Chief, Boston, Mass.: We schedule public and private school fire prevention inspections four times a year. We are granted legal authority to make these inspections.

Automatic sprinklers are required in all buildings constructed after 1943, in all basements, workrooms and storage areas.

In all public schools in the city, the practice is to connect the local fire alarm system to a master fire alarm box, which

THIS MONTH'S QUESTIONS

- **Do you regularly schedule public and private school fire prevention inspections? If so, do you have legal authority to inspect these schools and order violations corrected or are the inspections made on an "invitation and cooperation" basis?**
- **Do you require automatic sprinklers or automatic fire detectors in school buildings?**
- **Do you require that school fire alarm systems be connected directly to fire alarm headquarters?**
- **Do you permit smoking in teachers' lounge rooms and similar restrooms?**
- **Do you have a program for instructing teachers and school janitorial help in the rudiments of fire prevention? If so, briefly outline the subject matter.**

sends an alarm directly to fire alarm headquarters.

We permit smoking in teachers' lounge rooms, provided the necessary receptacles for disposal are located therein and strict supervision is maintained.

Brett Basham, Chief, Bowling Green, Ky.: Public and private school fire prevention inspections are regularly scheduled. We have the authority to inspect these schools and order violations corrected at once.

We require automatic fire detectors in school buildings.

We do not require school fire alarm systems to be connected directly to fire alarm headquarters.

We do not permit smoking in teachers' lounge rooms.

All teachers and janitorial help are instructed in the proper use of all extinguishers and their location, proper procedure for evacuation, and proper method of immediately turning in a fire alarm.

J. W. Hall, Chief, Hagerstown, Md.: We make fire prevention inspections in all public and private schools several times each year on a departmental basis and several inspections each year along with an inspector from the State Fire Marshal's office. The fire prevention code, as suggested by the National Board of Fire Underwriters, has been adopted by this city and therein lies the authority to enter and make inspections and order corrections to be made. I would like to point out that it has never become necessary to "order" corrections made. The Washington County School Board and this department enjoy an excellent spirit of cooperation.

We do not require automatic sprinklers or detectors in school buildings, nor do we require school fire alarm systems be connected directly to fire alarm headquarters.

Smoking is permitted only in teachers' lounge rooms and boiler rooms.

Our fire prevention program for instructing custodians is on an invitational basis and runs for a period of two and one-quarter hours. It includes the chemistry of fire and basic fire fighting procedures using various types of fire extinguishers. Evacuation procedures are stressed, as is the importance of knowing how and when to sound a fire alarm and by whom. The school board's supervisor of plant operations conducts informational classes for other persons.

Paul R. Flynn, Chief, Duluth, Minn.: We regularly schedule public and private school fire prevention inspections and have legal authority to do so.

We do not require automatic sprinklers or fire detectors in school buildings. Fire alarm systems are not required to be connected directly to fire alarm headquarters.

We permit smoking in teachers' lounge rooms.

Fire prevention guides for teachers are provided through the cooperation of the various insurance groups. Meetings are held during the school year with the principals of public and parochial schools,

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regarding fire alarms and drill procedures. Fire inspections of the school premises are conducted by fire prevention bureau personnel, accompanied by school custodians. Fire prevention week programs are held at all schools; Junior Fire Marshal programs are in effect in all elementary schools.

John Farris, Chief, Gastonia, N. C.: We inspect public and private schools regularly and have the authority needed for corrections.

We do not require automatic sprinklers or automatic fire detectors in school buildings, nor do we require fire alarm systems be connected directly to fire alarm headquarters.

Smoking is permitted in teachers' rest rooms.

Teachers are instructed in the proper exits to use with children, i.e.: if trapped, to close doors into hallways, bring children to windows marked by fire department for evacuation.

Janitors are briefed about keeping mops, cleaning liquids, etc. in proper containers, and keeping boiler rooms clean.

Allie A. Feldman, Chief, Denver, Colo.: We regularly inspect public and private schools and have legal authority to do so.

All Denver schools are now in the process of installing fire detection systems.

We are now requiring that school fire alarm systems be connected directly to fire alarm headquarters.

We permit smoking in teachers' lounges.

Teachers are instructed in the rudiments of fire prevention during Fire Prevention Week. Janitors and caretakers attend our school for 10 weeks and approximately three hours per week.

W. A. Dunham, Chief, Spokane, Wash.: We have legal authority under our fire code to regularly schedule public and private school fire prevention inspections.

Whether or not automatic sprinklers or automatic fire detectors are required in school buildings depends on the type and construction of the building. We have required sprinkling some of the old multistory buildings. Where sprinklers are not feasible, automatic alarm systems have been used with provisions for pupils to leave the building without using halls or corridors.

Multistory and sprinklered buildings have ADT service. A regular fire alarm box is installed at each school; all are coded in the same series so that alarms from these boxes are immediately recognized as a school location.

Smoking is only permitted in such rooms approved for that purpose.

Personnel are lectured on the cause and prevention of fire, what to do in case of fire, including the use of many new routes of escape which have recently been provided. The program also includes the reasons why certain changes in building layouts have been made to afford greater safety as well as a general discussion of the recent fire safety program.

A fire safety survey was made of every public and parochial school in Spokane and general safety requirements set up.

After the recommendations were made, the citizens approved a $500,000 bond issue for the public schools, and the parochial schools spent an excess of $300,000 on their installations.

Although we realize that we still have many deficiencies in our schools, we know that the chances are now much less for loss of life in many of these buildings.

James J. Sibert, Assistant Chief, Great Falls, Mont.: Public and private school fire prevention inspections are regularly scheduled. We have legal authority to inspect these schools and order violations corrected.

Automatic sprinklers or automatic fire detectors are required in school buildings.

We do not require school fire alarm systems be connected directly to fire alarm headquarters.

Smoking is permitted in teachers' lounges.

Janitors are instructed on sprinkler system operation, etc. Teachers are informed of the operation and use of fire extinguishers. Teachers and children are given talks on fire safety and how to conduct fire drills. □□

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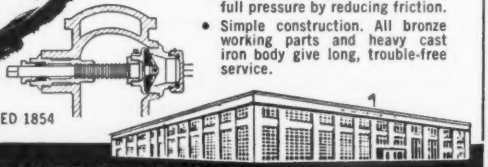

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FIRE ENGINEERING Promotions Announced

Alfred J. (Al) Houghton has been named publisher of FIRE ENGINEERING and its companion publications in the municipal field—WATER WORKS ENGINEERING and WASTES ENGINEERING. He has been associated with these journals for the past 23 years and succeeds to the position left vacant by the retirement of I. Herbert Case last May. For the past four years he has served as advertising director of these publications and prior to 1957 he was eastern sales representative.

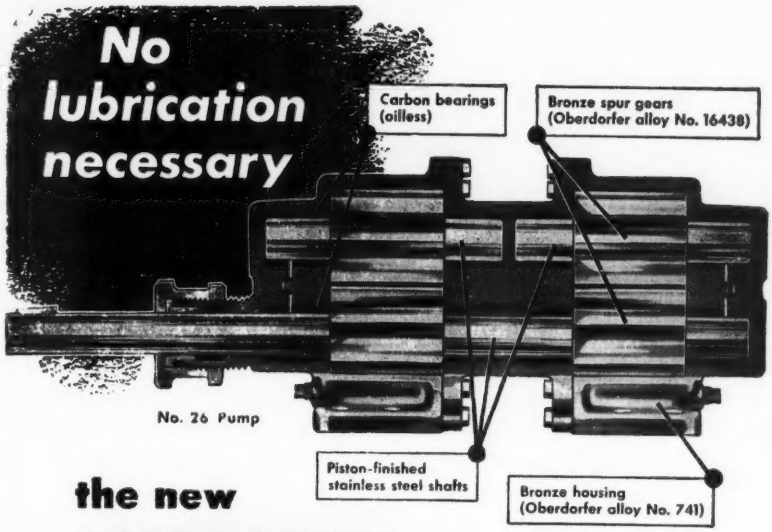
Al graduated from Pratt Institute in 1929 in industrial chemical engineering and served as a Sanitary Corps officer, Medical Department, U. S. Army, during World War II. He left the service with the rank of major attached to the Air Corps. Prior to joining the Case - Shepperd - Mann Publishing Corp. in 1937, then publishers of FIRE ENGINEERING, he was employed as a sales engineer by Brown Instrument Co. and in the market research field with McGraw-Hill Publishing Co.

Frank Hanifin, assistant editor of FIRE ENGINEERING, has been promoted to associate editor. Frank retired from the New York Fire Department in 1958 and had been assistant editor of the department's magazine *WNYF* for the last nine of his 21 years of service. Prior to joining FIRE ENGINEERING he was assistant city editor of the *Catholic News*.

Los Angeles Promotes Over 200 Members

Seven battalion chiefs, 108 captains, 157 engineers plus several other promotions were made effective January 1 by the Los Angeles City Fire Department. The biggest promotion at one time on record was made because of three-platooning the department as one of the final phases of the reorganization plan.

Cliff Dektar


No lubrication necessary
Carbon bearings (oilless)
Bronze spur gears (Oberdorfer alloy No. 16438)
No. 26 Pump
Piston-finished stainless steel shafts
Bronze housing (Oberdorfer alloy No. 741)

the new
OBERDORFER
BRONZE BOOSTER PUMPS

These booster pumps with oilless bearings will last 3 to 5 times longer than the old style equipped with plain bronze bearings. As a result of closer machining tolerances, over 20 feet of suction lift may be depended on.

The No. 13 and No. 26 Oberdorfer Pumps are more fool-proof than they have ever been. When you get to a fire you have something you can count on. It isn't necessary to wear pumps out checking them periodically to see if they will work. These pumps are metering pumps in principle and therefore must produce the same volume for every revolution of the drive shaft.

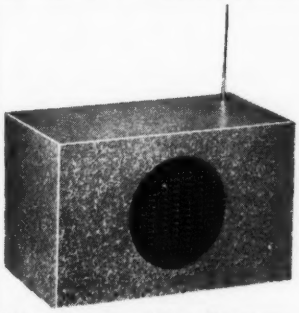
PERFORMANCE DATA—No. 26 and No. 13 PUMPS

Pump No.	Pump Shaft R.P.M.	Pounds Pressure	Hose Length and Size	Dry Suction Lift in Feet	Vol. in Gal. Per Minute
26	1600	120	500'—1½"	20'	150
13	1600	120	500'—1½"	20'	75

LIST PRICES — No. 26 — $249.50 No. 13 — $122.50

Slightly higher west of Rockies

FIRE PUMP DIVISION, Oberdorfer Foundries, Inc., Syracuse, N. Y.



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manufacture of 750 G.P.M., 1000 G.P.M. and 1250 G.P.M. pumpers, quads and special vehicles.

Hahn Motors, Inc. has been in business for 62 years. For the past 2 years Hahn has manufactured apparatus for one of the larger companies and will continue to build the same high standard of quality and engineer to your requirements. We will furnish the chassis of your choice or build on your chassis.

Send your specifications for quote. Distributor inquiries welcomed.

We specialize in reconditioning of fire apparatus.

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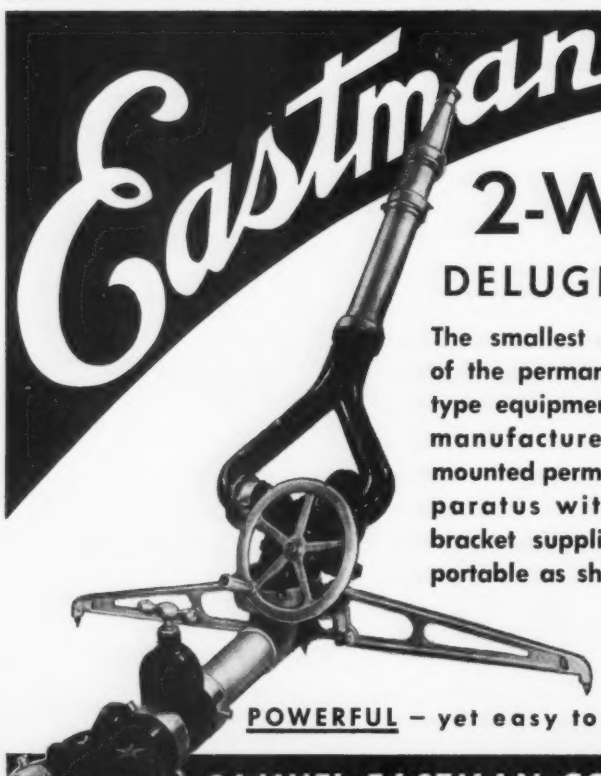
2-Way

DELUGE GUN

The smallest and lightest of the permanent-portable type equipment which we manufacture. May be mounted permanent on apparatus with carrying bracket supplied, or used portable as shown here.



POWERFUL – yet easy to operate –

SAMUEL EASTMAN CO., INC.

CONCORD, NEW HAMPSHIRE

MANUFACTURERS' NEWS

Continued from page 128

lines or with a 500-gpm portable foam deluge nozzle which is carried on the apparatus. The new unit joins two pumpers, a foam tank truck and two dry chemical trucks presently operated by the Port Security Department, Chief J. A. Straub, in protecting the Broward County port with its more than 5,700,000-barrel petroleum storage tanks and extensive warehouse facilities.

Nickum Fire-Jet Fireboat

W. C. Nickum and Sons, Naval Architects and Marine Engineers, 71 Columbia Street, Seattle 4, Wash., have designed a new fireboat which is powered by a Boeing 502 gas turbine engine. Two additional 502 gas turbines drive Carter fire pumps to a claimed capacity of 6,000 gpm at 150 psi, discharging through two Wegner Intelli-Giant monitor nozzles.

The craft features a 38-foot welded steel planing-type hull with 12-foot beam and 4-foot, 3-inch draft. It is said to be capable of 20 statute miles per hour with full fuel, two men and 3,200 pounds of portable gear.

Roof Entry Tool

Hirsch Fire Equipment, Inc., 2859 East 50th Street, Los Angeles 58, Calif., is marketing a new fire fighting tool designed by the Vernon, Calif., Fire Department, said to permit quick entry

through the roof of a building. Called the Vernon Pry Bar, the hand tool consists of an insulated, non-conducting handle, a heavy steel bar and a flattened hard-steel blade. It has an over-all length of 63 inches and weighs 14 pounds. Used to pry, penetrate and rip away shingles, tar paper, shake roofing and the like, it is said to work well with a chain saw.

Moves District Office

American LaFrance has announced that its district office in Kansas City, Mo., has moved to new and larger quarters at 2020 Broadway. The new telephone number is Harrison 1-2177. The company invites all its friends to visit the new office. □□

BETTER FIRE STATIONS

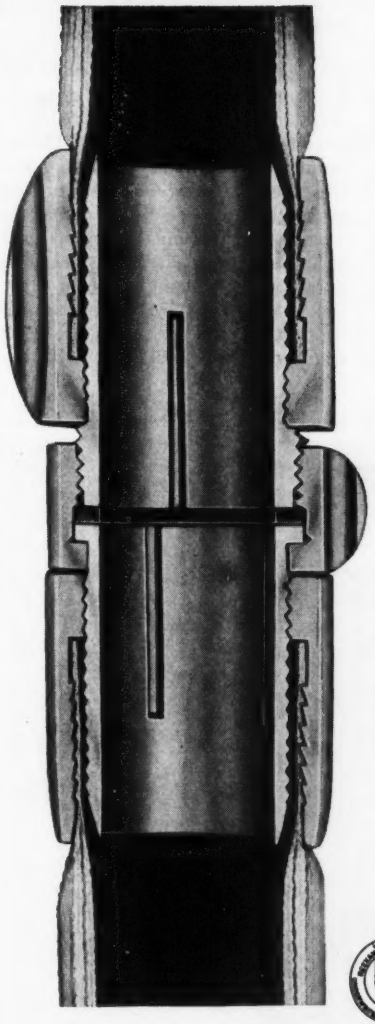
Continued from page 118

by installing radiant heat in the equipment room floor.

It is better to have driver guide lines inlaid instead of painted on the floors. Also, don't forget to specify acid treatment of concrete slabs to suppress dust. The floor of the main apparatus room should, by all means, have a drain or drains. When road oil and grease accumulations must be removed from a rig's undercarriage, it is essential to have drains. By the same token, if equipment is to be washed indoors in bad weather, drains are needed. It is surprising how many large stations don't have them.

Lighting, both artificial and natural, should be at a maximum. Electrical outlets around the perimeter of the apparatus room should be sufficient to supply all foreseeable needs—plus about 25 per cent for oversights. In planning electrical capacity, it must be remembered that this has to cover multiple requirements which include: Traffic signal operation, door manipulation, illumination, some heating and ventilating, perhaps an electric cook stove, air conditioning, air compressors, shop equipment, battery charging, dehumidifying, hose drying, television, and radio units. Lighting in all sections should be enclosed in flush fixtures to cut cleaning time.

In far too many stations, much time has to be spent in washing down and repainting apparatus room walls which become fouled with accumulations of exhaust soot from the rigs. Within a short time, painted plaster becomes smudged and no amount of scrubbing will clean it. Much of this can be corrected by use of some of the new vinyl wall coverings which can be scrubbed clean many times and still



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retain their color and fresh appearance. No matter what kind of wall covering is used, it is good practice from a health as well as housekeeping standpoint to provide attachments for drawing off truck exhaust when engines are run indoors.

Eliminate brass appurtenances that will require polishing. A good substitute can be either chrome plating or some of the new color anodized aluminums.

The watch, or control room, should be placed so that it commands public entrances and as much of the rest of the station as is practicable. It should contain a public address system wired to all spaces.

In planning size, it is well to try to anticipate future needs and provide for them when this can be done. Always try to allow enough space for an extra piece of equipment. The apparatus room should provide ample clearance between vehicles and between these and the walls, so men can move about without having to duck.

Shops, supply lockers, storerooms, hose storage compartments, etc., should be located so they are the shortest possible distance from the trucks or other point of use. Nothing wastes time like misplaced facilities.

Surprising economies can be achieved by selecting components, materials and devices whose wearing qualities and initial cost match their duties. There are a great many instances of valves and other units finding their way into a station that are "over-quality and overpriced" for the amount of service they must give, and the frequency of use or degree of permanence required. On the other hand, there are items which receive rugged daily use whose quality, longevity and serviceability fall short of the requirements.

Floor coverings are a prime example of the above. In too many instances, it has been found that asphalt tile will not serve satisfactorily in the proximity of shower and toilet rooms. The durability and ease of maintenance of terrazzo or floor tile are so superior to other types of coverings that their use is almost mandatory. In wash rooms, one of these products should be required.

No square corners

There should be no square corners in fire stations. Every corner in every room and those on stairways should be rounded. There should not be any dust-catching baseboards, and the juncture of wall and floor should be rounded. Up to at least waist height, walls in all portions of living, study, cooking and eating, and diversion rooms should have vinyl, tile or other suitable coverings which are scuff-proof and are easily cleaned.

Since morale is of the essence in a fire department, it is long past the time when it should have more consideration. This does not mean that all problems can be solved with a little more money. It means that facilities provided ought to take into account the users to a greater degree than is current. Much of this is bound up in the amount of housekeeping necessary and in the lack of consideration for human factors.

Human beings are a curious species and one of our strongest instincts is that of having our own niche or nook. Yet, we haven't given this much thought in station-planning. Having to share everything from a bed to a locker is a constant source of griping not only of individuals but of entire shifts. The miserly small lockers in some stations are a source of wonder. Cramped and improperly ventilated turnout stowage is another. If a city spends $100,000 or more for a building, it ought to be able to set aside enough room in it to give every man an amply sized individual locker.

There is considerable opinion favor-

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ing partitioned sleeping spaces of either one or two-man size. These are not necessarily rooms, but rather cubicles enclosed by partial or full walls. If you have ever had to sleep alongside an inveterate snorer, this has real meaning for you.

Proper design of kitchens

Few, if any kitchens have been designed to accommodate the storage requirements of two or three different shifts who want to keep their provisions (and their bills) separate. Generally, there is inadequate cupboard space and what there is doesn't permit its division for the shifts. Counter tops are at "woman" height, yet men are considerably taller and have to stoop whenever they are cooking or doing k.p. In fact, many sinks are so low that the worst part of washing dishes is bending over to get to them.

Every kitchen should have a hood and vent fan over the stove. The area around the stove should be covered with ceramic tile clear to the ceiling and there should be a tile wainscoating clear around. Garbage disposal should be restaurant—not household —size.

Don't install venetian blinds. Those dirt-catching, hard-to-clean monsters will give you nothing but work, and poor service.

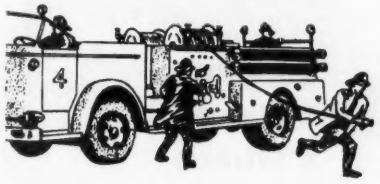
For many years station designs have been concentrated so avidly on apparatus rooms that all else has been given secondary consideration. The end result has, in many instances, been stations which do not meet their over-all requirements. One major factor has to dominate the layout of any apparatus room and its adjacent compartments, however. This is the need for ample openings into the apparatus room from all other areas of the building to make it accessible for daily work and to cut time in responding to an alarm. In this same vein, the traffic patterns within the station and across the apparatus room must eliminate all conflict no matter where men may come from when an alarm comes in.

For personal convenience, don't fail to provide an ample recreation room with a "homey" atmosphere instead of an institutionalized appearance. Set aside a room in a quiet section for study and as a library. Every unit should have a room that is sufficiently large to hold all personnel, plus 50 per cent more. This can serve as a classroom, for lectures, and a host of other purposes.

Exercise is not only desirable; it is highly essential and be sure to provide for some form that is sufficiently strenuous to give your men a hard workout. The obvious forms, of course, are

Did You Know?

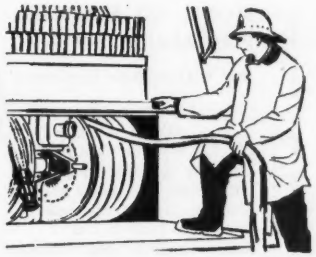
BOOSTER HOSE IS USED ON UP TO 85% OF ALL SUBURBAN AND RURAL FIRES AND OVER 50% OF ALL OTHER FIRES



These statistics emphasize the need for the faster, more efficient handling and maintenance of booster hose provided by the modern hose reel. The reel permits instant action with liquid always ready at the nozzle. Rewinding by hand or with electric motors provides neat, compact storage and speeds return to in service status.

200 FEET OF CRL HOSE CAN BE HANDLED EFFICIENTLY ON ELECTRIC REWIND REELS

One man can pay out and rewind CRL hose in less time than is normally required by three or more men when reels are used instead of coiling the hose in the truck bed. Powerful, electric rewind motors with remote switch makes pre-connected collapsible hose handling as simple as handling booster hose. Reels are designed with a capacity up to 200 feet of 1½ inch hose. In addition to faster handling, reels reduce wear and maintenance.



REWIND MOTORS CAN BE MOUNTED IN SIX DIFFERENT POSITIONS ON HANNAY REELS OR MOUNTED SEPARATELY IN THE CABINET

Hannay chain drive reel design lets you put the rewind power where *you* want it for most efficient arrangement of equipment on the truck. Positive chain drive is always perfectly aligned, whether drive motor is mounted on the frame or in any remote position on the circumference of the reel.

For complete information on fire hose reels, send for the pocket-size guide to "Efficient Hose Handling for Fire Fighting Equipment." Read about the features that make Hannay reels the first choice of fire fighters everywhere.

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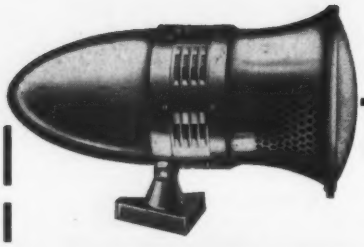

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handball, volley ball, tennis, badminton, gym apparatus, boxing and wrestling.

Until such time as population shifts level off, the problem of providing fire protection in rapidly growing communities will be acute. The expansion of both urban and suburban residential areas in wholly unpredictable directions and amounts can cause no end of trouble. Some communities have tried to get on top of these problems by experimenting with prefabricated stations that can be quickly assembled and placed in service, or as rapidly dismantled and moved to new locations. However, the results have been expensive. It is cheaper to build a regular station.

Despite all that has been said and written, communities right at this moment are building stations loaded with quickly deteriorating materials, finishes and equipment that soon will absorb so much crew time that they will produce an adverse morale effect, disproportionate upkeep costs and a severe cut in efficiency. One reason for this is that seldom do firemen have an opportunity to express their ideas on station design and to have those ideas disseminated. It is long past the time when everyone concerned should listen to the man on the firing line and give him the tools he needs to most effectively perform his mission. □□

CARRIER FIRE

Continued from page 115

Yard. At 9:29, a dispatcher's third was transmitted for this fire. The officer in charge had called for a second-alarm response; to provide it, the dispatcher had to send out the third. About 20 minutes later, another ladder company and engine company were special-called to the factory fire.

After the fire on the *Constellation* was brought under control at 10:44 p.m., Chief David told newsmen that the fire had been intense, and the ship's metal plates red hot. When water hit the metal, it was turned to scalding steam, driving the firemen back.

"Open spaces on the ship intensified the fire. We had to use acetylene torches on plates 2½ inches thick. And while we were throwing tons of water, we had to make sure we didn't pour too much into the hold lest the ship capsize," he said.

The fire was finally out at 3 a.m., December 20, but the first-alarm companies didn't take up until three days later. The ship had hardly cooled when Vice Admiral Charles Wellborn, Jr., commandant of the Third Naval District, called for a three-ad-

miral court of inquiry, which began hearings on December 21, two days after the fire. In 11 days of hearings the court heard 61 witnesses.

Lieutenant Commander Herman M. Bading, Navy engineer supervising the installation of aircraft handling equipment on the carrier, believed the fire had been propagated from its point of origin when metal bulkheads radiated hotly enough to ignite electronic equipment in the combat intelligence control room and that burning gas from materials such as plastic cables and varnish had spread the fire.

Not a "ship fire"

Assistant Chief of Department Arthur J. Massett told FIRE ENGINEERING that while the fire originated in flammable fuel, the use of fog or foam was not necessarily indicated, since the oil was not confined where it could be blanketed. The oil was gushing from the tank and was actually a running oil fire. Chief Massett said that he did not consider this a "ship fire" as fire fighters usually understand the term. Once the fire fighters stepped onto the hangar deck, he said, they faced what was comparable to a big Class A fire in an immense ballroom or arena. □□

Acknowledgement: The Editors are grateful to the United States Navy and to the New York Fire Department for their cooperation in the preparation of this article.

MEN AND MATERIAL

Continued from page 119

(a common situation). You attach hose lines to each of the two 2½-inch outlets which a nearby corner hydrant provides, laying out 150 feet of hose in each line, and then go to work on the fire. Two lines prove to be insufficient so it is estimated that at least two more are required. You have no choice but to go to another hydrant, one block away, for water.

If, as is common, the blocks are 500 feet long, this means that an additional 1,000 feet of hose must be stretched out. And you aren't going to get much water out of these last two lines because of the high friction loss in 500 feet of hose. Furthermore, because all four lines are supplied by hydrants, you have no control over the supply pressure of the water, and can only vary nozzle pressure within limits, by shutting down and changing the size of the tip (Fig. 1.).

Now suppose instead you had hooked up a 1,000-gpm pumper to that first hydrant, using it to supply

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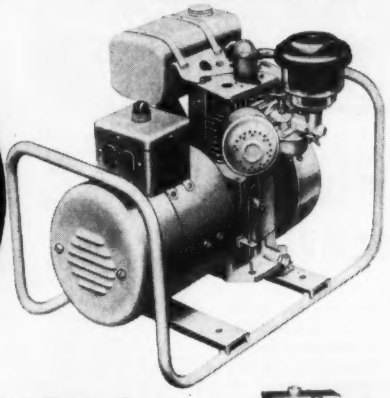

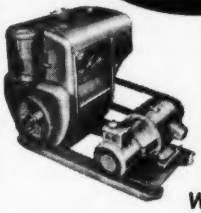

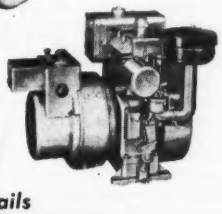

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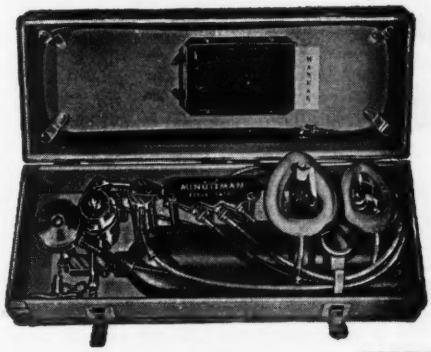
prevents emergencies from becoming tragedies



The Stephenson Minuteman Resuscitator is essential in respiratory emergencies where a minute may save—or lose—a life. The instrument costs infinitely less than the first life it saves.

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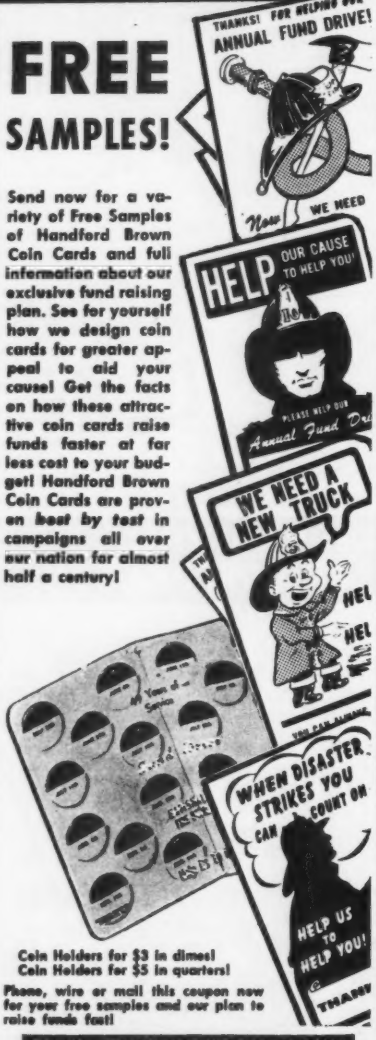

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the original two 150-foot lines. When these prove inadequate, you stretch out two more 150-foot lines from the pumper. You have finger-tip control over the amount and pressure of the water, and have saved 700 feet of hose as well as the time and men required to lay it. Had the fire required the use of a heavy stream, you could have supplied it from the pumper, but not from the hydrant.

To more emphatically demonstrate the advantages of pumping, let us consider the foregoing illustration from the standpoint of water delivered, rather than just the number of hose lines. First, estimate the amount of water you can obtain from the four hydrant lines, arbitrarily establishing the hydrant residual pressure of 65 psi (certainly a generous figure), and requiring the nozzle pressure to be between 40 and 60 psi. Under these conditions, the most water you can get out of the 150-foot lines is 245 gpm, with a 1⅛-inch tip operating at 43 psi nozzle pressure. Similarly, the most water the 500-foot lines will deliver is 140 gpm each, using a ⅞-inch tip at 40 psi nozzle pressure. Total water delivered by the four hydrant lines amounts to 770 gpm, and the total amount of hose required is 1,300 feet.

Now supply the lines from a pumper located at the nearest hydrant. Three lines 150 feet long, provided with 1⅛-inch tips operating at 50 psi nozzle pressure, will deliver approximately 800 gpm. Total amount of hose used is 450 feet or 850 feet of hose saved by pumping (Fig. 2).

Mobility of lines

Recently, while watching nine firemen struggling to move a charged hose line, the writer was reminded of another seldom-mentioned virtue of the modern pumper. This particular line was one of two being supplied by a hydrant, to which no gate valves had previously been attached. Draining the line would have facilitated its relocation, but this was impractical because it would have required shutting down the hydrant. This would have been time-consuming and would have also cut off the water supply to the second hydrant line.

Had the line in question been supplied by a pumper, the discharge gate could have been instantly closed, and the line promptly drained and easily moved, without affecting other lines. If this particular line had been in use above street level, it could not have been drained, if supplied by a hydrant, without first uncoupling it from the hydrant. If supplied by a pumper, it could have been promptly drained

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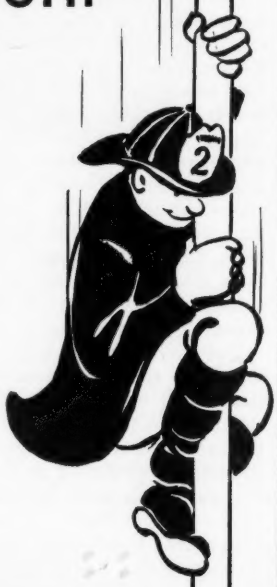

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by opening the drain valve provided for that purpose. Moving the line after draining would have required fewer men, and would not have sapped the vitality of those who did perform the work of moving it. Anything that reduces a fireman's work is advantageous, for an exhausted fireman is little better than no fireman at all. □□

TRAFFIC CONTROL SYSTEM

Continued from page 126

defect. If no control indicator is visible, caution is necessary.

The equipment employed has proven highly dependable and practically service-free. Transmitters are crystal-controlled and draw only 1½ amperes. Receivers are crystal-controlled superheterodynes. All control units are designed to use premium electronic tubes and no component is ever driven at more than one-half of its rated capacity which is said to assure long life and trouble-free performance.

Based on the performance of the three "test" lights, Erie applied to the Federal Communications Commission for license in the Public Safety Radio Services for the installation of emergency traffic control at 17 intersections on 12th Street, one of the main east-west arteries across the center of the city and also through the most concentrated industrial area. The license was issued in March 1960 and the system was immediately installed at these intersections.

The city's committee elected to use the all-red block at all intersections for engines approaching on 12th Street. All intersections go to red on approaches from the cross streets except four streets which are one-way. These get a single green in their favor with the other three sides red.

This selection works very well in Erie. Ranges are set from one to three blocks on 12th Street, depending on the volume of traffic on the cross streets. These ranges never vary and no adjustments are necessary once it is set. The equipment permits separate adjustments for the cross street ranges, so that these are, in general, shorter than ranges on 12th Street which most of the apparatus uses regularly.

The 12th Street installation has accumulated over 100,000 light hours since it was installed. Counting each apparatus separately, we have used the system 1,600 times. During this period the fire department has reported only one unit failure. The company which installed the equipment has informed us that there have been a total of three failures since the installation. In the instance of the failure

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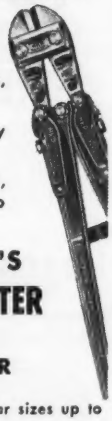

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reported by our department, the safety factor prevented possible tragedy. The white flashing lamp did not light and the fire department driver slowed almost to a stop. The only loss was a few seconds of time.

The Erie Fire Department has run both ways on 12th Street from fire headquarters with from one to four rigs at different times of day and night and has never had a run where it did not get through all traffic hazards swiftly and efficiently with the system. The effectiveness of the system leaves no questions at Liberty Street, Lincoln Avenue and Parade Street where the apparatus using 12th Street regularly meets apparatus on these cross streets. The white flashing control indicator flashes only towards the rig which has gained control and immediately indicates who is to proceed across the intersection. Further, now that regular vehicle traffic knows the white flashing lamps mean that apparatus is approaching, our path is often cleared long before it would be through use of sirens only.

The City of Erie is presently negotiating for the installation of the system on all main streets. The mayor and city council realize the value of this method towards the protection of lives and property, not only of firemen but also of all motorists and all citizens who may need the services of these men. Further, the use of this excellent device ties up only that traffic in the immediate area of the apparatus, not one, two or more streets or a whole downtown area at one time. As the apparatus moves, the area of traffic lights affected moves ahead also.

The possibility of accident exists every time a rig leaves its quarters. The Erie Fire Department operators have instructions about crashing red lights and the record is good. They know that speed is essential and that the emergency traffic control system by helping overcome traffic congestion and traffic signal problems, gives them the right of way to do their job. □□

No Dogs Allowed

The ABC Board in Birmingham, Ala., placed watchdogs inside State liquor stores to prevent a rash of burglaries that always break out around Christmas time each year. However, they were removed after one night when Public Safety Commissioner Eugene Connor objected to them as being too vicious.

Connor stated he could not allow firemen to fight any fires in liquor stores unless the blaze could be controlled from the outside. Only if the dog handler were with the firemen would he allow them to go inside the stores.

Robert Sams

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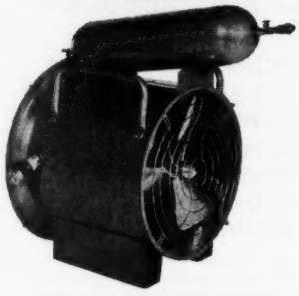

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Fire colleges

Arizona State Fire Training School—Oct. 19-21, Phoenix College, Phoenix. Sponsored jointly by State Department of Vocational Education, Phoenix College, Phoenix Fire Department and the Arizona Firemen's Association. For information write Assistant Chief Jake Siken, Director, c/o Phoenix Fire Department, 49 South 1st Street, Phoenix 4, Ariz.

Central Western Fire School—Apr. 8-9, West Alexandria, Ohio. For information, write Chief W. H. Cheesman, 309 Briarcliff Road, Dayton 15, Ohio.

Connecticut State Fire College—June 5-9, New Haven Fire Department training ground. For information write Roy W. Adams, Director, Vocational Training Field Service, Connecticut State Department of Education, 490 Capitol Avenue, Hartford 15, Conn.

Fire Department Instructors Conference—Feb. 28-March 3, Memphis, Tenn. For information write Harry H. Wolff, Conference Secretary, P. O. Box 1089, Chicago 90, Ill.

Indiana Fire Service Training Program—Feb. 7-9, Fire Administration Courses; Apr. 4-6, Industrial Fire Course; Apr. 24-28, Arson Investigators Seminar; May 15-19, Basic Fire School; June 6-8, Rescue Training Course; Sept. 13-16, Indiana State Fire School; Oct. 30-Nov. 3, Fire Inspectors Course. All courses to be held at Purdue University, Lafayette, Ind. For information write, Professor Shelby Gallien, Director, Public Safety Institute, Division of Adult Education, Purdue University, Lafayette, Ind.

Maryland Industrial Fire Protection Short Course—Feb. 9-11, Fire Service Extension Department, University of Maryland, College Park. For information, write Robert C. Byrus, Director, Fire Service Extension Department, P. O. Box 85, College Park, Md.

Morris County Fire School—February 7, District #6 Fire Headquarters, Parsippany Troy-Hills; March 7, Budd Lake Fire Headquarters. For information, write Robert H. Wright, Long Hill Lane, Chatham, N. J.

North Dakota Fire Offices Conference—Mar. 27-29, Memorial Building, Jamestown, N. D. For information, write Chief Percy A. Wellman, Fire Headquarters, Jamestown, N. D.

North Dakota State Firemen's Training Program. Mar. 27-29—Officers Training School, Jamestown; May 15-17—Instructors School, Bismarck. For information write J. K. Eckes, Executive Secretary, North Dakota Firemen's Association, Killdeer, N. D.

Southern Wisconsin & Northern Illinois Fire School—September 10, Green County Fair Grounds, Monroe, Wis. For information, write Herman Pfund, New Glarus, Wis. ☐☐

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GERVAIS TESTS

Continued from page 125

Extinguishment was made with a saving of 11 seconds and 10.5 gallons of water. It was observed that as the heat built up in the control room, the paint fell in strips from the ceiling. The same action took place in the ceiling of the test room after a longer interval of heat attack. It was surmised that retardant paint would prove more effective if applied to new or sanded surfaces.

Test No. 4

Conditions and objectives

Fire No. 4 was started in the kitchen (Room 4 on building plan) which was wired with one alarm detector head and four thermocouples. The room contained a 200-pound fuel load consisting of paper cartons and lath crates. The hallway to the south and gym to the east had been decorated with non-treated highly flammable crepe paper and other decorations. Drop-door shelves from the kitchen, through which food could be served, opened into each of these areas. Attack was initiated through an outside window using a high-pressure booster line equipped with a Hardie gun working at 450 pounds nozzle pressure.

The objective of Problem No. 4 was to demonstrate the lateral spread of fire which may result from an improper attack.

Observations and conclusions

The automatic detector head sounded the first alarm in 1 minute, 30 seconds, at which time ceiling temperature registered approximately 140°F. After a pre-burn of 9 minutes, temperature at the 4-foot level registered 600°F. Ceiling thermocouple had failed after 3 minutes. At this time a crew attacked from an outside window using a high-pressure booster gun alternating between fog and solid stream. Fire was forced through the "drop-door," catching hall decorations on fire. These, in turn, flashed through the connecting door and involved the east end of the gymnasium.

Test No. 5

Conditions and objectives

Fire No. 5 was a simulated "extension" roof fire. A section of the gym roof, 16 x 20 feet, was stripped with 2 x 2-inch stock 16 inches O. C. Over this was tacked lightweight building paper. Fire, which was started under the bottom edge of the roofing paper,

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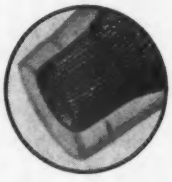

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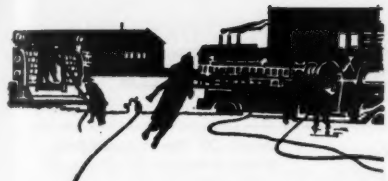

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worked its way toward the roof peak. Surface extinguishment was made by two successive bombings by helicopter, each drop was 35 gallons of borate-wet water solution.

Observations and conclusions

Fire No. 5 was to simulate a roof fire started by flying embers. Because of the weather conditions, the existing shingle roof was too wet to burn from the outside, therefore a patch roof, as described, was installed. The first bombing was made after the roofing had a pre-burn of 10 minutes, during which time the fire ate through the shingles in several places. The first bombing registered a direct hit and extinguished most of the surface fire. The second bombing, another direct hit, completed surface extinguishment. The fire which had eaten through the roofing into the attic, though small at the time of bombing, was not affected, and soon had the interior involved. Later bombings were made when attics were completely involved and roofing mostly consumed. These bombings had no appreciable effect in retarding the fire.

From observations made on Problem 5, it was concluded that: (a) Helicopter drops can be very accurate; (b) where roofs are already involved, follow-up ground action with small line would be necessary for control; (c) the most advantageous use would be in preventing roof fires by making drops ahead of running fires; (d) bombing in small quantities on buildings in which the roof is partly consumed are ineffectual and might prove dangerous to fire personnel inside by forcing flames down upon them.

Test No. 6

Conditions and objectives

Fire No. 6 was an attic fire. The attic was wired with automatic alarm indicators and was thermocoupled. The fuel load consisted of 250 pounds of pasteboard cartons and wood lath crates. Attack was made through a louver in the east gable end of the attic. The 45-foot aerial platform truck rigged with a 2½-inch line equipped with a 240-gpm fog nozzle made the extinguishment in 1 minute, 20 seconds.

The attic, having no fire stops, exposed a cubic volume of 5,525 feet to fire spread.

Observations and conclusions

The automatic detector head sounded the alarm in 35 seconds, the funneling of heat to the attic peak causing an activation by rate of rise.

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After a pre-burn period of 9 minutes, attack was made with a Snorkel improvised in the basket of the aerial platform. The nozzle was thrust through the louver opening on the east gable and extinguished the fire which had involved most of the attic area. An indirect attack was maintained for 1 minute, 20 seconds to control the fire. Three hundred twenty gallons of water were used. Thermocouple T_2 in peak of attic failed. By observation and interpolation of Couple T_1 temperatures at time of attack, it is estimated T_2 reached nearly 1,100°F.

The versatility of the improvised Snorkel in making an attack in places inaccessible to aerial truck or water tower was demonstrated when the basket was able to move into the louvered opening allowing operation of the 2½-inch fog nozzle inside the attic space. The following conclusions were made: (a) For rescue work, with the possible exception of mass evacuation, the Snorkel appeared versatile, safe and fast; (b) that for large-stream attack on attic and upper-floor fires, the Snorkel is more effective in placing water at the seat of the fire than is water tower.

The Firemen Training Staff, Oregon State Division of Vocational Education believe the tests met their original objectives and provided information well beyond that originally expected. None of the work would have been possible without the cooperation of the following organizations: Marion County fire departments, American Fire Alarm Co. Inc., Salem Electric Company, Southern Pacific Railroad Company, Masons Supply Co. representing Albi Manufacturing Co., Georgia-Pacific Corporation, Oregon State Fire Marshal's Office, U. S. Forest Service—6th Region. □□

EXTENDING BATTERY LIFE

Continued from page 127

365 would amount to one-half cup of acid lost during a year. This is a very damaging amount.

In addition, through habit, an apparatus driver usually tests the same cell first each day; thus most of this acid left in the hydrometer actually comes from this first cell. The acid remaining in the hydrometer after this first cell is tested is merely exchanged as additional cells are tested. This is a reason one cell usually goes bad before the rest. The department felt certain that this loss of acid with its accompanying false test readings causing overcharging and the other damaging effects listed above, were the primary reasons for previous unsatisfactory battery longevity.

Volt-meter readings

Salem's success during the past five years has been due primarily to the substitution of daily volt-meter readings instead of the hydrometer tests. There are two general types of voltmeters; one which puts a substantial load on the cell while it is being tested and is quite accurate. However, daily testing would discharge the battery a small amount, necessitating occasional recharging. The second type which puts no load on a cell must be extremely sensitive because the voltage drop in a cell is slight until it is nearly discharged.

Salem selected the second type—a very sensitive meter and with which each cell is tested separately. This particular volt-meter sells for about $15 and has proven entirely satisfactory in the department. One meter is in use at each fire station. The manufacturer recommends turning on the headlights for a couple of minutes prior to the test to remove the surface charge so a more accurate reading can be obtained; for fire department purposes, however, such acute accuracy is probably unnecessary.

Other points in battery care that merit consideration are:

1. Charging practices. Rapid charging and discharging tends to buckle the plates, causing them to shed their active material. The starting motor draws very heavy current, but there is, of course, no control over this. The load drawn by other electric motors, electric primers, reel rewind motors, etc., can be minimized by help from the generator.

While the operator has little control over the discharge rate, the charging rate is directly under his control. Departments with fast chargers (75 to 100 amp.) are subjecting their batteries to a terrific strain; 10 or 15 amps. over a longer period will be much easier on the batteries. Also, overcharging, either fast or slow, is one of the greatest disservices the operator can do to a battery. Removing the battery from the charger before it has reached the highest possible charge is beneficial.

2. Fire departments in cities with high mineral content or other impurities in their water would do well to either purchase distilled water or catch and store rain water in glass or other nonmetallic containers for battery use. Some minerals and impurities neutralize the acid and others cause a local action inside the battery which eats away the active material. Of course, care should be taken to keep water above the level of the plates and separators, but not so full as to cause boil-over with resultant acid loss.

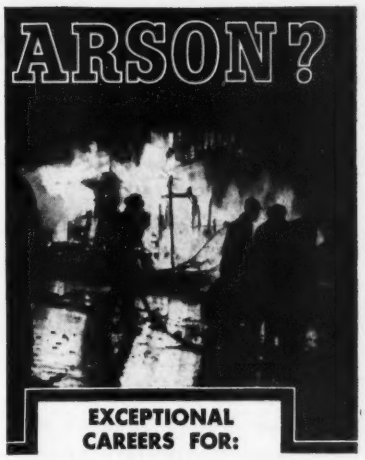
3. It is important to keep the battery clean and dry, for moisture or dirt permits the current to leak over the surface between the terminals and cause corrosion. It is easier to prevent corrosion by keeping the battery clean and dry than to combat it after it has started, especially when starting with a new battery. If corrosion is present, scrape away as much as possible and finish cleaning with ammonia or soda; then cover the metal surfaces with a film of pure petroleum jelly. Never use ordinary grease as most greases will in themselves cause corrosion. When using soda, take care to keep it out of the cells as it will neutralize the acid.

To summarize: Substitute volt-meter testing instead of daily hydrometer testing. Avoid fast charging and overcharging. Use only pure water maintained at proper level. Keep battery clean and corrosion-free. As with anything of value, better care gives better service and longer life. □□

Abbreviated Fire Prevention Code Issued

The National Board of Fire Underwriters has announced publication of a new abbreviated edition of its recently revised National Fire Prevention Code.

Copies may be obtained free on request by community officials and other persons having an interest in this activity from the National Board of Fire Underwriters, 85 John Street, New York 38, N. Y. In the Middle West, write to 222 West Adams Street, Chicago 6, Ill., and west of the Rockies, to 465 California Street, San Francisco 4, Calif.



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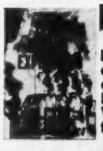

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Coming events

Feb. 6-8—Association of Fire Districts of the State of New York. Annual meeting, Hotel Buffalo, Buffalo, N. Y. For information, write James H. Holmes, President, 511 University Avenue, Buffalo 23, N. Y., or Stephen P. Fox, Secretary-Treasurer, 77 Paul Avenue, New Hyde Park, L. I., N. Y.

Apr. 18-20—Industrial Mutual Aid & Disaster Control Seminar. Annual meeting, Shamrock Hilton Hotel, Houston, Tex. For information, write S. A. Anthony Jr., President, The National Institute for Disaster Mobilization, Inc., 475 Fifth Avenue, New York 17, N. Y.

May 21—Southern Wisconsin & Northern Illinois Firemen's Association. Annual meeting. For information, write Herman Pfund, New Glarus, Wis.

May 28-30—Southeastern Association of Fire Chiefs. Annual meeting, Orangeburg, S. C. Secretary-Treasurer, C. W. Wyrick, Chief of the Fire Department, Greensboro, N. C.

June 1-2—North Dakota Firemen's Association. Annual meeting, Wahpeton. Executive Secretary, J. K. Eckes, Killdeer, N. D.

June 15-17—Eastern Association of Fire Chiefs. Annual meeting, Wilmington, Del. Secretary, Edwin J. Clark, Chief of the Fire Department, Box 328, Wayne, Pa.

June 19—New England Division, IAFC—Annual meeting, Wentworth-by-the-Sea, Portsmouth, N. H. Secretary-Treasurer, Walter R. Messer, Chief of the Fire Department, Keene, N. H.

June 19-22—New England Association of Fire Chiefs. Annual meeting, Wentworth-by-the-Sea, Portsmouth, N. H. Secretary-Treasurer, A. W. Kimball, Chief of the Fire Department, Hingham, Mass.

June 24—Central Western Firemen's Association. Annual meeting, Spencerville, Ohio. For further information, write Chief Kent Shoemaker, Oxford, Ohio.

July 13-15—Ohio Fire Chiefs Association. Annual meeting, Cincinnati, Ohio. For information, contact Chief Dan Vogel, Cincinnati Fire Department or W. H. Cheesman, Secretary, 309 Briarcliff Road, Dayton 15, Ohio.

Aug. 20-23 — Canadian Association of Fire Chiefs. Annual meeting, Kitchener, Ont. Secretary-Treasurer, Allan H. Clark, Chief of the Fire Department, Lakefield, Ont.

September 24—Great Lakes Association of Fire Chiefs. Annual meeting in connection with IAFC Conference, Las Vegas, Nev. Secretary-Treasurer, Willard G. Compton, Chief of the Fire Department, Springfield, Ohio.

September 25—Pacific Coast Inter-Mountain Association of Fire Chiefs. Annual meeting in conjunction with IAFC Conference, Las Vegas, Nev. Secretary-Treasurer, Stephen Edmondson, Chief of the Fire Department, Pasadena, Cal.

September 25—Missouri Valley Association of Fire Chiefs—Annual meeting in conjunction with IAFC Conference, Las Vegas, Nev. Secretary-Treasurer, Chief Raymond G. Davis, Sedgwick County Fire Department, Wichita, Kans.

September 25-28—International Association of Fire Chiefs. Annual meeting, Las Vegas, Nev. Executive Director, B. Richter Townsend, 232 Madison Avenue, New York 16, N. Y.

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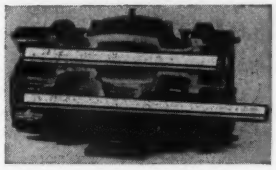

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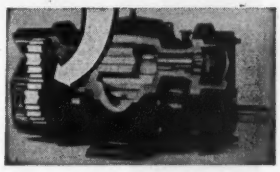

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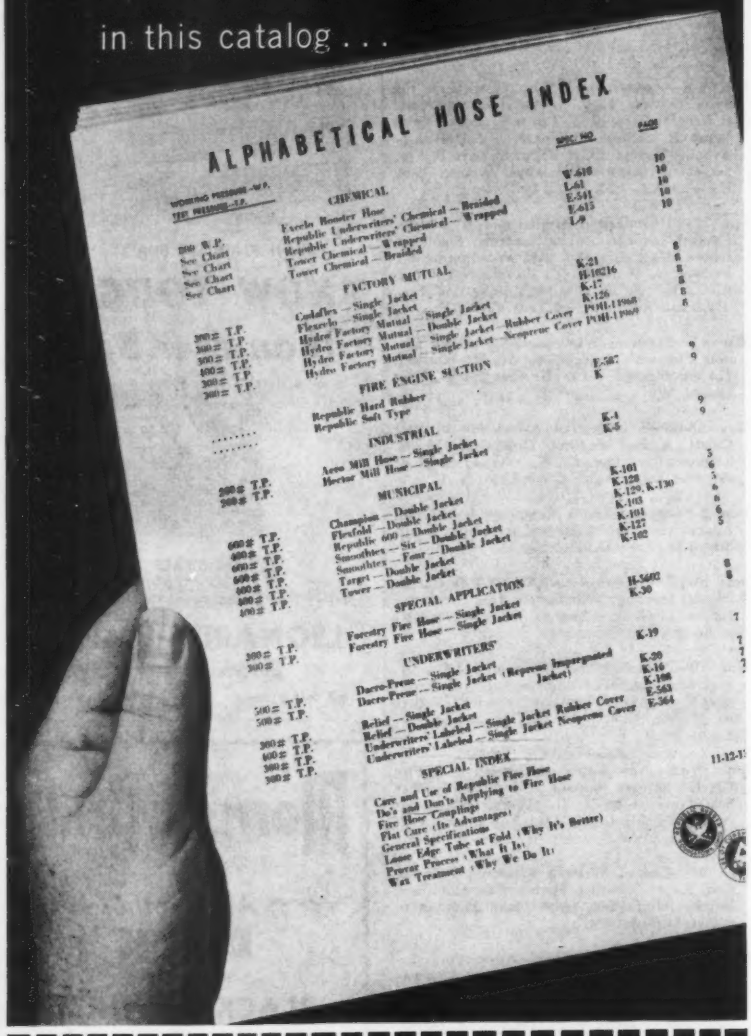

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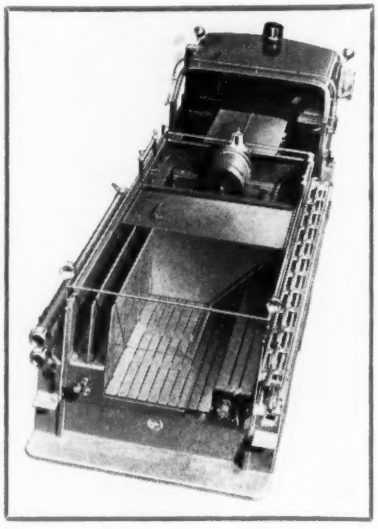

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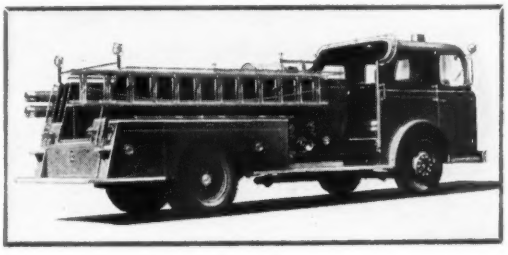

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